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An Analysis of Tank Platoon Operations and Their Simulation on Simulation Networking (SIMNET)

Eugene H. Drucker and David A. Campshure
Human Resources Research Organization

June 1990

Fort Knox Field Unit
Training Research Laboratory

U.S. Army Research Institute for the Behavioral and Social Sciences

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This report identifies the capabilities and limitations of SIMNET for simulating the tactical activities performed by tank platoons. SIMNET was not developed as a training device, but as a simulator for demonstrating a new technology for simulation networking. Despite its origin as a device for demonstrating networking technology, SIMNET's fidelity as a combat simulator suggests that it can function as a device for training tactical skills. Before it can be used effectively to train tactical skills, however, it is necessary to identify the tactical activities that can and cannot be performed on SIMNET.

Researchers began with an analysis of armor operations to identify the activities performed by platoon leaders and other platoon personnel during platoon drills, offensive missions, defensive missions, and special operations. Once these activities were identified, the research staff attempted to perform a representative sample of the activities on SIMNET. The outcomes of these attempts were summarized on a checklist.

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Tasks involving planning and radio communications could be performed at the highest level of fidelity. Many other tasks could be performed only at lower levels of fidelity, either because critical cues were not accurately simulated or because the responses to these cues differed from those that would be made in combat. Finally, some tasks, such as open hatch operations, could not be performed at all because their capability was not simulated. These results suggest that trainers should ensure that soldiers who train on SIMNET are aware of the difference between the performance of combat operations on SIMNET and their performance in actual combat.

Research Product 90-22

An Analysis of Tank Platoon Operations and Their Simulation on Simulation Networking (SIMNET)

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FOREWORD

This report describes the results of an analysis of SIMNET as a device for simulating tank platoon tactics.

This research is a part of the Army Research Institute for the Behavioral and Social Sciences (ARI) task entitled, "Application of Technology to Meet Armor Skills Training Needs." That task is performed under the auspices of ARI's Armor Research and Development Activity at Fort Knox, whose mission includes optimizing the use of armor training devices for readiness in gunnery and tactics.

The proponent for this research is Training and Doctrine Command (TRADOC), and the user is the U.S. Army Armor Center (USAARMC) (Letter of Agreement with ARI entitled "Establishment of Training Technology Field Activity, Fort Knox, Kentucky," 4 November 1983).

Progress on this report has been disseminated through briefings to the Assistant Commandant, Technical Director, and Department Heads of the U.S. Army Armor School and to the Chief, Training Technology Field Activity at Fort Knox.

The research provides detailed information on the capabilities and limitations of SIMNET for simulating platoon drills and other activities performed by tank platoons during offensive and defensive missions. The information should be useful at all levels of training and testing development for armor platoons.

EDGAR M. JOHNSON
Technical Director

AN ANALYSIS OF TANK PLATOON OPERATIONS AND THEIR SIMULATION ON SIMNET

EXECUTIVE SUMMARY

Requirement:

Problems associated with field exercises, such as the high costs of ammunition and fuel, shortages of training areas, and safety constraints, have resulted in the need for alternative approaches for training armor tactics at the platoon level. Tactical engagement simulations and table-top battle simulations have helped to alleviate some of these problems, but a computer-supported battle simulation is needed to alleviate other major problems. Although a computer-supported battle simulation has not been developed specifically for this purpose, the Defense Advanced Research Projects Agency (DARPA) has supported the development of a network of interactive battlefield simulations, Simulation Networking (SIMNET), to demonstrate local area and long-haul networking technology. Since SIMNET simulates many aspects of the M1 tank and combat environment, it potentially can be used to train platoon tactics. Before training programs can be developed for SIMNET, however, it is necessary to identify the activities that are adequately simulated on SIMNET and those that are not.

The purpose of the research described in this report was to examine the capabilities and limitations of SIMNET for performing the tactical activities conducted during tank platoon operations.

Procedure:

The project began with an analysis of armor operations in order to identify the activities performed by tank platoons during combat. Using information contained in field manuals and other military documents, the activities performed by each tank during platoon drills were identified. In addition, the activities performed by the platoon leader, platoon sergeant, tank commanders, and tank crews during offensive missions, defensive missions, and special operations were identified. The research staff then attempted to conduct on SIMNET the drills and a representative sample of the activities performed during tactical operations. The observations made during these attempts were recorded on a checklist in terms of their fidelity. This information was then analyzed to determine how well each activity could be performed on SIMNET.

Findings:

The results of the research showed that there were wide differences in the degree to which various tactical activities could be performed on SIMNET. Some activities could be performed at a high level of fidelity, among them planning and communications. Some tasks could not be performed at all because the capability to perform these tasks was not incorporated into SIMNET. Among

them were issuing hand-and-arm signals and firing the commander's machine gun. The majority of the tasks fell between these two extremes because some, but not all, elements of the tasks could be performed.

The results of the analysis suggest that, although certain tactical activities can be performed on SIMNET, platoons will not be able to practice the interrelationship and sequencing of all tasks comprising platoon operations. Trainers should ensure that soldiers who train on SIMNET are aware of any differences between the performance of activities on SIMNET and the performance of these activities in the field. Trainers should also monitor the performance of soldiers on SIMNET for evidence of skill acquisition and for the possibility of negative transfer.

Utilization of Findings:

The research provides information that should be useful to the Armor School for designing training programs to be implemented on SIMNET. In addition, the research should be useful to agencies responsible for developing requirements for future battlefield simulations.

AN ANALYSIS OF TANK PLATOON OPERATIONS AND THEIR SIMULATION ON SIMNET

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AN ANALYSIS OF TANK PLATOON OPERATIONS AND THEIR SIMULATION ON SIMNET

Chapter 1. Introduction

Numerous problems associated with conducting training in the field have created the need for alternative approaches to training. Among these problems are the high costs of ammunition and fuel, shortages of training areas, safety constraints, and the inability to replicate certain combat conditions such as nuclear and chemical warfare. Alternative approaches that have been developed include tactical engagement simulation and battle simulations (Department of the Army, 1984).

Tactical Engagement Simulations

Tactical engagement simulations are devices that are used during field exercises to simulate weapon effects and casualties. Multiple Integrated Laser Engagement System (MILES), for example, is a device that is used during field training in lieu of live ammunition. The device uses eye-safe laser beams and laser sensors to determine whether or not a target would have been hit during a combat engagement. Although tactical engagement simulations may alleviate some of the problems associated with conducting field exercises, they leave other problems unresolved (e.g., fuel costs, safety constraints). Many of these other problems can be alleviated by the use of battle simulations.

Battle Simulations

Table-Top Models

Battle simulations are non-battlefield approaches to training that replicate certain aspects of the battlefield. Two table-top replicas of the battlefield used for training are Dunn Kempf and Battle Simulation in Urban Terrain (BLOCKBUSTER). Dunn Kempf is a table-top replica of the battlefield that is used to train leadership skills in platoon leaders and platoon sergeants. BLOCKBUSTER is a table-top replica used to train urban warfare in infantry units.

Computer-Supported Battle Simulations

In addition to table-top models of the battlefield, there are several battle simulations that are supported by computers. Computer-Assisted Map Maneuver Simulation (CAMMS), for example, is a computer-supported simulation that is used for training battalion and brigade level commanders and their staffs. Army Training Battle Simulation System (ARTBASS) is a transportable computer-supported simulation that is used for training commanders and their staffs at the battalion level.

The U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) has developed two computer-supported battle simulations for conducting research on the use of battle simulations for training, but neither one has been adopted by the Army for unit training. Simulation in Combined Arms Training (SIMCAT) is a low fidelity battle simulation in which tank commanders and platoon leaders interact with computers to move tank symbols along a map

displayed on a television monitor and to simulate firing the main gun (Drucker, 1986). Platoon Leader Battle Simulation (PLBS) is an upgraded version of SIMCAT in which tank commanders and platoon leaders also interact with computers to move vehicles and to fire guns (Perceptronics, 1988).

Simulation Networking (SIMNET) is a network of interactive battle simulations developed for the Defense Advanced Research Projects Agency (DARPA) to demonstrate local area and long haul networking technology. The goal of the DARPA-sponsored project was to develop the technology for creating a simulated battlefield that would enable "fully-manned platoon-, company-, and battalion-level units to fight force-on-force engagements against an opposing unit of similar composition" (Pope, Langevin, & Tosswill, 1987). Although SIMNET simulates the armor battlefield at a much higher level of fidelity than either SIMCAT or PLBS, there are many aspects of the battlefield that are not simulated at all or that are only partially simulated because higher levels of fidelity were not needed to demonstrate networking technology.

The Need for a Computer-Supported Battle Simulation for Training Platoon Tactics

Despite the problems involved in training armor tactics in the field, no computer-supported battle simulations have been developed specifically for training armor tactics at the platoon level. SIMCAT and PLBS were developed for conducting research on the use of low-fidelity simulations in training, and SIMNET was developed to demonstrate networking technology. These computer-supported battle simulations were not developed as substitutes or supplements to field training. Although they simulate many of the tasks that are performed in the field, they do not simulate the entire domain of tasks performed by tank platoons.

The Use of SIMNET to Train Platoon Tactics

Among the battle simulations developed for SIMNET to demonstrate simulation networking is a simulation of the M1 tank (Chung, Dickens, O'Toole, & Chiang, 1987). Although the SIMNET M1 tank simulation was not developed specifically to train armor tactics, it simulated many aspects of both the tank and the combat environment in which tank would normally function. As a consequence, SIMNET can potentially be used to train platoon tactics. If so, its adoption as a tactical training device would help to overcome many of the problems associated with conducting training exercises in the field.

Purpose of the Present Research

Although SIMNET simulates many aspects of the tank and the battlefield, it was not intended to be an exact replica of either the tank or the battlefield. This was because total fidelity was not required to demonstrate local area and long haul networking of simulators. Nevertheless, SIMNET offers the most complete computer-supported simulation of the armor battlefield that is currently available. If the simulation is complete enough to enable units to practice armor operations, then it can be used as a supplement to training in the field.

Before SIMNET can be used to train armor tactics, it is necessary to identify its capabilities and limitations for simulating the tactical activities performed by tank platoons during armor operations. Training developers will need this information to design training programs for SIMNET and to identify the skills that will have to be trained in the field. It is the purpose of this research to identify the domain of tactical activities performed by tank platoons and to determine to extent to which each is simulated on SIMNET.

Organization of the Report

Chapter 2 of this report describes the procedure that was used to identify the tactical activities performed by tank platoons and to identify the capabilities and limitations of SIMNET to simulate these activities. Chapter 3 contains a general description of SIMNET at the time the research was conducted. Because SIMNET is a modular system that is periodically upgraded and revised, any description of the battle simulation will be ephemeral. Included in Chapter 3 is a general description of SIMNET, detailed descriptions of the SIMNET M1 tank stations, and descriptions of the systems that are located at each station. Chapter 4, which is based on observations presented in Appendix A, integrates the observations of battle drills. Chapter 5, which is based on observations presented in Appendix B, integrates the observations of offensive operations. Chapter 6, which is based on observations presented in Appendix C, integrates the observations of defensive operations. The focus in Chapters 4, 5, and 6 is on the personnel comprising the platoon rather than on the tank itself. Chapter 7 summaries the research and contains conclusions about the capabilities and limitations for SIMNET.

Chapter 2. Methodology

The capabilities and limitations of SIMNET were identified by determining the level of fidelity with which tactical activities can be performed on SIMNET. Although high levels of fidelity are not always necessary for effective training, the optimal level of fidelity required for effective training on SIMNET could not be assessed. This was due, in part, to the lack of specific training objectives for SIMNET. It also due also to the lack of information pertaining to the optimal level of fidelity required for learning different tasks.

To determine the level of fidelity with which tactical activities can be performed on SIMNET, comparisons were made between the performance of tactical activities in the field and their performance on SIMNET. The focus of these comparisons was on (a) the stimuli that elicit the performance of the activities and affect how the activities are performed, and (b) the responses that are made to these stimuli. The specific steps that were followed are described below.

Identifying Tactical Activities

Before the capabilities and limitations of SIMNET could be identified, it was necessary to define the domain of platoon tactics. Various armor documents identified the missions, operations, and activities performed by armor units (e.g., FC 17-15, ARTEP 71-2). These documents, however, did not provide enough detail to serve as the framework for identifying capabilities and limitations of SIMNET. Descriptions were needed of the specific actions performed by the platoon leader, the platoon sergeant, the tank commanders, and the crews during offensive and defensive missions, and during special operations. In addition, descriptions were needed of the specific actions of each tank during drills. To obtain this information, existing descriptions of armor activities were reviewed in detail. The specific actions performed by the various members of the platoon during offensive and defensive missions and during special operations were identified from these descriptions and were listed sequentially by position for each mission and operation. The specific actions performed by each tank during drills were also identified and listed. Four sources of information were initially examined to obtain this information. These were:

- ARTEP 71-2, Army Training and Evaluation Program for Mechanized Infantry/Tank Task Force (Department of the Army, 1981)
- FC 17-15-1, Tank Platoon ARTEP Mission Training Plan (U.S. Army Armor Center, 1984)
- FC 17-15, The Division 86 Tank Platoon, (U.S. Army Armor School, 1986)
- FC 17-15-3, Tank Platoon SOP, (U.S. Army Armor Center, 1985).

A fifth document, ARTEP 17-237-10-MTP, Mission Training Platoon for the Tank Platoon, Coordinating Draft (U.S. Army Armor School, 1987), was released in draft form after the tactical domain had been identified. This document contained relevant information not found in the other four documents.

Consequently, the document was reviewed and the results of the analysis were modified when necessary to incorporate the new information.

Tank Platoon Tactical Drills

A total of 17 drills were identified and analyzed. The results of these analyses are contained in Appendix A. Because sequencing of actions is of paramount importance in a drill, the results of the analyses are presented in the order in which the actions should occur. The actions included those performed by the platoon leader (PL), the platoon sergeant (PSG), the platoon as a whole (PLT), the sections within the platoon (e.g., bounding section, overwatch section), and the separate tanks within the platoon (T1, T2, T3, and T4).

Offensive Missions

The analysis of offensive missions was conducted within the framework of a movement to contact. This was done on the assumption that tank platoons conduct movement to contact when executing offensive missions assigned to higher echelons. When conducting a mission to contact, a tank platoon will conduct several different activities. These activities have been categorized in various documents as operations or platoon tasks. Because a taxonomy of platoon tactics was not being developed, these labels were of little concern. Instead, the focus of the analysis was on identifying the tasks performed during movement to contact and the elements that perform these tasks.

The results of the analysis of the offense is contained in Appendix B. Six activities are included: (a) mission preparation, (b) movement to contact, (c) recon by fire, (d) fire and movement, (e) bypass, and (f) hasty attack. A seventh activity, deliberate attack, was not included because the tasks performed during a deliberate attack are the same as those performed during a hasty attack. The results of the analysis of movement to contact are reported separately for the movement platoons and for the overwatch platoons. The results of the analysis of fire and movement and hasty attack are reported separately for the movement platoons and the for the support by fire platoons. The actions within each activity are reported separately for platoon leaders, platoon sergeants, tank commanders, and crews. The actions within each of these categories are presented in the approximate order in which they would be likely to occur in combat.

Defensive Missions

The results of the analysis of the defense are contained in Appendix C. Three activities are included: (a) preparation of deliberate battle position, (b) execute a platoon defensive mission, and (c) hasty occupation of a battle position. Four other defensive activities were identified but were omitted from the analysis because of they were identical to other activities. Sector defense was omitted because the performance elements were identical to those in execute a platoon defensive mission. Strong point defense was omitted because the performance elements for the tank platoon are identical to those for the preparation of deliberate battle position and execute a platoon defensive mission. Delay was omitted because the performance elements were identical to those performed in the three activities contained in Appendix C.

Counterattack was omitted because the performance elements are identical to those in a hasty attack. The actions within each activity are presented as they were for offensive missions.

Special Operations

The results of the analysis of six special operations are contained in Appendix D. The special operations included road march, occupation of an assembly area, consolidation and reorganization, passage of lines, and relief in place.

Performing Tactical Activities on SIMNET

Once the drills and the tactical activities performed during platoon operations were identified, the research staff attempted to perform a sample of these activities on SIMNET. The platoon leader's position was filled by a staff member who had been an armor officer, while the platoon sergeant's position was filled by a staff member who was a brigade level staff officer in the Kentucky Army National Guard (KYARNG). The remaining duty positions were filled by other members of the research staff of the Human Resources Research Organization (HumRRO) and ARI.

The staff members performed the activities in a series of steps. First, each of the members was trained by a SIMNET trainer to operate each of the four tank crewman stations. Each staff member then practiced the operation of all four stations. Next, they were instructed by the staff member who was a former armor officer on how to perform each of the drills. Then they practiced the drills. After attempting to perform the drills, the experienced staff member then instructed the remaining staff members on the performance of other tactical activities. The staff members then attempted to perform these activities. Finally, the staff members attempted to move over the simulated SIMNET terrain and to position the tank in defensive positions. Upon completing their attempts to perform the drills and tactical activities, the staff members then discussed their observations of SIMNET's capabilities and limitations.

It should be noted that the attempts to implement tactical activities on SIMNET were made during the summer of 1987. Because SIMNET is a modular system that is periodically modified and improved, the observations of SIMNET's capabilities and limitations pertain to the system as it existed at that time.

Completing the Simulation Fidelity Rating Form

A rating form was prepared based on a set of procedures developed by Morrison and Hoffman (1988) for evaluating the capabilities of gunnery devices for training gunnery skills. The rating form developed by Morrison and Hoffman was designed to determine the extent to which various gunnery actions could be simulated on different devices. Researchers responded to the following four "YES/NO" questions: (a) Can the action be performed or practiced on the devices (if not, do not answer any more questions); (b) can every subcomponent (step) of the action be performed or practiced; (c) are stimuli/responses equivalent to those on operational equipment; and (d) should performance on the device be positively related to performance on the operational equipment? Explanations were required for all "NO" responses.

A fifth question was added to the rating form used to analyze the capabilities of SIMNET. This question asked whether or not the performance of the action on SIMNET could be observed.

It is important to note that no attempt was made to perform all of the activities listed on the rating form. The responses made on the rating form were based on the results of the attempts by the staff to execute the drills and tactical activities on SIMNET, the staff's knowledge of SIMNET, and on the developers' documentation describing SIMNET and its operation.

Integrating the Observations

The final activity in the analysis was to interpret and integrate the information summarized on the rating form. The first step in this integration was to review (a) the outcome of the analysis of tactical activities, and (b) the coordinating draft of ARTEP 17-237-10-MTP (U.S. Army Armor School, 1987). The purpose of these reviews was to identify in detail the specific activities performed by each crew during a drill, and by the platoon leader, platoon sergeant, tank commander, and crews during the execution of a tactical mission. The next step was to review the information on the rating form and to determine from this information whether or not each activity can be adequately performed on SIMNET. Particular attention was paid to the fidelity of the stimuli that initiate an action and to the fidelity of the steps that are performed in executing the action. The results of these analyses are summarized in Chapters 4, 5, and 6 of this report.

Chapter 3. SIMNET Overview

SIMNET was developed as a modular system, and it is frequently upgraded and improved. This chapter of the report contains a description of the SIMNET system that was present at Fort Knox in 1987. It was this version that was used for the research described in the next three chapters.

The information presented in this chapter was obtained from the following SIMNET documents:

- SIMNET M-1 Crew Manual (Perceptronics, 1987)
- SIMNET M1 Abrams Main Battle Tank Simulation: Software Description and Documentation (BBN Laboratories, 1987)
- The SIMNET Management, Command, and Control System (BBN Laboratories, 1987)
- The SIMNET Network and Protocol (BBN Laboratories, 1987)
- SIMNET Company/Platoon User's Manual (Draft) (Perceptronics, 1986)

The battle simulations located at a single site (e.g., Fort Knox) are connected in a local area network. One of the goals of the SIMNET project is to connect battle simulations at different sites (e.g., Fort Knox and Fort Benning) using long haul networking. This would enable units at different locations to train together in combined-arms exercises.

Among the weapon systems simulated in SIMNET is the M1 tank. The SIMNET M1 is operated by the four members comprising an M1 crew: (a) the tank commander, (b) gunner, (c) driver, and (d) loader. However, the simulated vehicle performs only some of the functions and contains only some of the controls that characterize the actual tank.

Simulation Fidelity

The SIMNET M1 can only be operated in the closed-hatch mode. Neither the full open nor the protected open mode is simulated. The tank commander, driver, and loader can view the battlefield through unity vision blocks. The gunner can view the battlefield through the gunner's primary sight (GPS), and the tank commander can view it through the gunner's primary sight extension (GPSE), as well as through his unity vision blocks.

Tank Commander's Station

The tank commander's station has three vision blocks that together provide a 64° horizontal field of vision. In an actual M1 tank, the tank commander's station contains six unity periscopes that together provide a full 360° horizontal field of vision. To enable the tank commander to see beyond the 64° horizontal field of view provided in the SIMNET M1, the tank commander can rotate the cupola (and therefore the set of three unity vision blocks) by depressing the palm switch and moving a thumb switch in the desired direction

of movement. However, because the maximum rotation of the cupola is 300°, the tank commander cannot see directly to the rear unless the turret is traversed.

Gunner's Station

The GPS on both the M1 tank and the SIMNET M1 provides the gunner with two levels of magnification--3X and 10X. Although the gunner's station on an M1 tank also includes a thermal imaging system (TIS) for use during night operations and for other purposes, the system is not simulated on the SIMNET M1. The GPSE provides the tank commander the same view available to the gunner.

Driver's Station

The driver of an M1 tank can operate the tank with the hatch in the open or closed position. Only the closed position is simulated in the SIMNET M1. For closed hatch operations, the driver's station in an M1 tank contains three periscopes, providing the driver a 170° horizontal field of view. The driver's station in the SIMNET M1 contains three vision blocks, but they provide the driver only an 89° horizontal field of view. The driver's station of an M1 tank also contains a night vision viewer to enable the driver to drive at night. This viewer is not simulated in the SIMNET M1.

Loader's Station

The loader's hatch on an M1 tank can be closed or opened to either an intermediate- or full-open position. Only the closed position is simulated in the SIMNET M1. The loader's periscope, which rotates to provide a 360° view in an M1 tank, rotates only 300° in the SIMNET M1. The night vision viewer, which can be installed in place of the periscope in the M1 tank, is not simulated in the SIMNET M1.

Weapon Systems

The M1 tank is normally equipped with a 105mm main gun and three machineguns--a 7.62mm machinegun (M240) coaxially installed, a 7.62mm machinegun (M-240) externally mounted at the loader's station, and a .50 caliber machinegun (M2) externally mounted at the tank commander's station. The SIMNET M1 simulates only the main gun.

Fire Control System

Turret control and stabilization. Gun elevation (and depression) and turret traverse on an M1 tank are electrically controlled and hydraulically powered. Direction and rate of travel are controlled by either the gunner's or tank commander's power control handle. These controls for elevation and turret traverse are simulated on the SIMNET M1. The stabilization system on an M1 tank maintains turret orientation during movement of the hull. It also maintains the elevation of the gun tube relative to the ground during hull and/or turret movement. The stabilization system is simulated on the SIMNET M1.

Ballistic computer. The ballistic computer in the M1 tank improves gun aiming accuracy. The computer automatically adjusts the lead when aiming at moving targets and controls elevation when the range is input from the laser range finder. The gunner manually inputs the type of ammunition that is fired. Cant and crosswind are input automatically from sensors, and various types of information (e.g., air temperature, tube wear, barometric pressure) are manually input. The ballistic computer system on the SIMNET M1 simulates only gun elevation (based on range and ammunition type) and lead angle.

Gunner's primary sight (GPS). The GPS in the M1 tank is linked in elevation to the main gun. Moving horizontally in the reticle are a series of stadia lines that are used to determine lead in emergency mode, i.e., failure of the ballistic computer. Moving vertically in the reticle are a series of vertical lines used for range in the emergency mode. Range determined by the laser range finder may be displayed in the reticle along with a ready-to-fire symbol, a multiple return line, and a malfunction symbol.

When a moving target is tracked, information from the position of the control handle is used by the computer to calculate the appropriate lead. The reticle is then repositioned in the GPS so that the proper lead will be applied when the aiming point is on the target. Because the computer calculates the appropriate lead from the positioning of the control handle, it is necessary for the gunner to "dump the lead" (i.e., to release the palm switches) before aiming again. The GPS in the SIMNET M1 is identical to the GPS in the M1 tank except that the reticle is not repositioned when tracking a moving target. Thus, there is no need to "dump the lead" on SIMNET. Kraemer and Bessemer (1987) have reported evidence of negative transfer when soldiers trained on SIMNET failed to "dump the lead" during live-fire exercises.

Gunner's primary sight extension (GPSE). The GPSE extension provides the tank commander the sighting view and data provided the gunner in the GPS. Because the GPSE in the SIMNET M1 provides the same view and data as the GPS, the description provided above applies to the GPSE as well.

Laser rangefinder. The laser rangefinder in the M1 tank can determine the range to targets located from 200 to 7,990 meters away. If the target range is between 200 and 4,000 meters, the range is automatically entered into the ballistic computer and appears in the GPS. If the target range is between 4,010 and 7,990 meters, it will appear as a flashing number in the GPS, but it will not be entered into the ballistic computer. The Range Switch can be used by the gunner to select either the first or last return of the laser beam for determining the range to the target. The laser rangefinder on the SIMNET M1 can only operate to 3,500 meters because this is the maximum range from which the simulated battlefield can be viewed. A Range Switch is provided to enable the gunner to select either the first or last return.

Gunner's auxiliary sight (GAS). The GAS on an M1 tank is used when the GPS is not operating. The sight contains ballistic reticles for three types of ammunition--SABOT, HEAT, and HEP. The GAS is not present in the SIMNET M1. However, if the GPS is damaged during a simulated engagement, the GAS ballistic reticle will automatically replace the nonballistic reticle in the GPS.

Muzzle reference sensor. The muzzle reference sensor on an M1 tank determines the amount of gun tube bend from uneven heating and cooling. Information from the sensor is entered by the gunner into the computer. The sensor is not simulated in the SIMNET M1 which operates as if the gun tube is always straight.

Smoke Systems

A smoke generating system is incorporated into the exhaust system of an M1 tank. This allows a smoke cloud to be created when the engine is running. The smoke generator is operated by a switch on the driver's master panel. In addition, a smoke grenade launcher is mounted on the outside of the turret. Smoke grenades can be discharged by pressing a button on the commander's control panel. A total of 12 grenades can be discharged in two groups of six. Neither the smoke generating system nor the smoke grenade launcher is simulated on the SIMNET M1.

Communications System

Intercom. The members of a crew communicate with each other over an intercom. An intercom control box is located at each station. The intercom is operated by a switch on each crewmember's helmet. In addition, the tank commander, driver, and gunner each have a remote intercom switch so that they can operate the intercom while performing their duties. The gunner's switch is located on his footrest, the tank commander has switches on the CWS control handle and on the commanders hand grip, and the driver has a switch on both the right and left side of the shift control.

Radio set. The M1 tank is equipped with an AN/VRC-12 radio which is located in the loader's station. The loader can change the frequency at the transmitter. A transmitter frequency selector box is located in the commander's station. The platoon leader and platoon sergeant also have an auxiliary receiver in their tanks. Each member of the crew can transmit on the radio set by pushing a switch on his helmet. The SIMNET M1 is equipped with a 40 channel CB radio. Unlike the tank radio which can be set to frequencies containing two decimal places, the radio in the SIMNET M1 can only be set to whole frequencies. Because of this difference, a SIMNET CEOI must be used on the SIMNET M1. Because crewmembers wear a headset instead of a helmet in a SIMNET M1, they transmit by using a switch located on the headset cable rather than on a helmet.

Turret-to-Hull Reference Display

In an M1 tank, there are several cues available to assist the crewmembers determine the orientation of the turret to the hull. Included are the visual cues that are present when looking out the hatches, motion cues that help the crewmembers determine the direction in which the tank is moving, and relative position cues such as the position of the driver's compartment in the hull. None of these cues are available in the SIMNET M1. The driver is able to see the guntube if it is oriented toward the front of the tank, but not if it is oriented elsewhere. Because there are no hatches in the SIMNET M1, the visual cues presented when looking out of the hatches are not available. Motion cues are not available because the simulated tank does not actually move, and the position of the driver's compartment is not available as a cue both because the driver is in a separate compartment and because the

turret does not actually turn. To enable the tank commander, gunner, and loader determine the orientation of the turret to the hull, a visual display is provided. The display shows 12 bars radiating from an outline of the hull. One of the 12 bars is lit to show the orientation of the guntube relative to the hull.

Azimuth Indicator

Unlike earlier tanks, the M1 tank does not have an azimuth indicator. The indicator, which provided a reading of direction relative to a fixed reference, was used primarily to prepare range cards. With the availability of the thermal sight, there was no longer a need for the azimuth indicator. The SIMNET M1, however, does have a grid azimuth indicator. Unlike the azimuth indicator in tanks preceding the M1, the grid azimuth indicator in the SIMNET M1 provides actual grid azimuth rather than relative azimuth. It is therefore more like a compass than like the azimuth indicator on earlier tanks. The grid azimuth indicator is used when determining direction by intersection or resection, and to obtain an observer-target (OT) azimuth when adjusting indirect fire.

Chapter 4. The Simulation of Drills on SIMNET

The drills that were examined on SIMNET included five movement formation drills (wedge, line, column, vee, and echelon); two stop formation drills (coil and herringbone); three moving technique drills (traveling, traveling overwatch, and bounding overwatch); a change of formation drill; and six action or reaction drills (action [non-contact], actions on contact, contact, action [contact], react to air attack, and react to indirect fire). The responses to the questions pertaining to drills that were contained on the simulation fidelity check list are summarized in Appendix A.

Movement Formations Drills

Movement formation drills begin when the platoon leader identifies the appropriate movement formation for the terrain and situation. Because the terrain on SIMNET lacks detailed features, almost any movement formation can be performed at any location. The platoon leader must therefore base his selection of the formation almost exclusively on the tactical situation. Once the selection is made, the platoon leader issues the appropriate movement command. If radio silence is being maintained, the command is issued using a hand-and-arm signal. Because hand-and-arm signals cannot be issued on SIMNET, the platoon leader must issue the command using his radio. This reliance on the radio, however, may lead to negative transfer.

Once the command is given, the platoon leader establishes the direction or axis of movement, the speed of movement, and the appropriate intervals. The SIMNET display lacks sufficient detail to establish cardinal direction. For example, the sun is not displayed and there are no shadows. The platoon leader can use the grid azimuth indicator, but this device is not available on an actual M1 tank. There are other problems that make it difficult for the platoon leader to establish direction and speed of movement. The visual, auditory, and physical dues for speed provide insufficient information and are difficult to interpret. The vehicles cannot be distinguished from each other except by their relative positions, and the distance between them cannot be adequately judged. Maneuver is facilitated because there are no obstacles to movement and no speed cues other than the speedometer in the driver's compartment. In short, the lack of realistic cues probably results in little positive transfer in terms of establishing direction and speed of movement.

Once the platoon moves, each tank must move to its proper position relative to its wingman and must then disperse to an appropriate interval. Because the tanks are indistinguishable, the driver may be unable to find the appropriate position within the platoon if the tank gets out of formation. Once the tank is in its appropriate position, the driver's restricted field of view may interfere with the driver's ability to maintain that position. On the other hand, the lack of terrain features makes it easier to maintain an appropriate position in the formation because there are no obstacles or uneven terrain to disrupt the formation.

Gun orientation and movement security must be maintained during movement. The turret-to-hull reference system display must be used to orient the gun because the gun tube cannot be seen except on occasion by the driver. Movement security cannot be maintained in the normal manner because of the lack of open hatches and the restricted views from the vision blocks. The commander, in particular, must rotate his cupola to see beyond the 64° limit

imposed by his vision blocks. Maintaining movement security to the rear is a unique problem because the commanders vision blocks can be rotated only 150° in either direction. On the other hand, there are few obstacles or terrain features blocking the view of the terrain.

The platoon must maintain the formation, speed, and interval between tanks until it receives other directions. The lack of adequate speed and distance cues and the restricted views from the vision blocks interfere with the maintenance of the formation. On the other hand, the lack of obstacles and movement cues facilitates the maintenance of the formation. The consequence is that the maintenance of the platoon formation during a movement formation drill on SIMNET differs substantially from the maintenance of the formation in the field.

Coil Formation Drill

Before the platoon executes the coil formation, the platoon leader must identify terrain that is suitable for a coil formation and provides cover and concealment. Because the coil can be executed on almost any terrain that is displayed on SIMNET, and because almost none of this terrain provides cover and concealment, the performance of this element is quite unrealistic. Upon selecting a suitable location for the coil, the platoon leader must issue his command by radio because hand-and-arm signals cannot be issued on SIMNET. Tank 1 halts in position and the other tanks move to their appropriate position relative to Tank 1. The four tanks then occupy positions in their immediate areas that maximize fields of cover, concealment, and fields of fire. This performance element cannot be performed adequately because SIMNET terrain contains few positions that provide cover and concealment and because crews cannot dismount to assess the adequacy of these positions. Once the guns are oriented, the platoon establishes and maintains local security. Because the crews cannot dismount, an observation or listening post cannot be established. Lack of an open hatch and limited visibility from the vision blocks limit the performance of this activity. Finally, the platoon performs actions at a halt. While refueling and ammunition transfer can be conducted, the method is unique to SIMNET. Although maintenance is generally performed when the platoon stops, it cannot be performed on the simulator.

Herringbone Formation Drill

The limitations in executing the coil formation apply to the herringbone formation as well.

Traveling Drill

Platoon movement using the traveling technique shares many of the problems associated with the movement formation drills. The technique can be performed at almost any location so that the platoon leader does not have to determine whether or not the terrain is suitable for the technique. Hand-and-arm signals cannot be used either to issue the platoon order or to acknowledge receipt of the order. Once the platoon moves in a formation, the comments contained in the previous section on movement formation drills apply to the traveling drill.

When the platoon moves using the traveling technique, the platoon leader must control the movement of the platoon. To do this, he must be able to observe the other tanks in the platoon. The lack of an open-hatch mode, limitations in his vision blocks, and the lack of identifying features on the tanks within the platoon interfere with his ability to observe the platoon and to control its movement. The inability to issue hand-and-arm signals can again cause reliance on the use of the radio for controlling the movement of the platoon.

During movement, the tanks must maintain (a) their position within the formation, (b) an appropriate interval with respect to the other tanks, and (c) the appropriate speed. In some respects, these movement requirements are facilitated by the lack of terrain features. Trees, hills, depressions, and other terrain features rarely block the view of the driver or the tank commander. In addition, there is rarely a need to change speed as the terrain varies because the motion of the simulated vehicle is not affected by terrain variations. On the other hand, the lack of motion cues creates a tendency for the driver to drive too rapidly. Because the speedometer is located to the side rather than in front of the driver, he may have a tendency to pay little attention to it. The tank commander, on the other hand, may be unable to adequately control the speed of the vehicle because he does not receive the usual movement cues that enable him to estimate speed.

While some characteristics of SIMNET facilitate the maintenance of the platoon formation during movement, there are other characteristics of SIMNET that interfere with the maintenance the platoon formation. For example, the driver can see only 60° through his vision blocks; this is just over one third of the horizontal field of view available in an M1 tank. Also, the tank commander cannot view the platoon from an open hatch. He must use the vision blocks which must be rotated because they do not provide a 360° view. Judgments of the distance between vehicles tend to be inaccurate. Although the tank commander can use the laser range finder to determine the distance to the other tanks in the platoon, this procedure, which is safe on SIMNET, could lead to the development of a habit that is dangerous in the field.

Finally the platoon must maintain all around movement security. Once again there are aspects of the simulation that simplify the performance of this activity and aspects that increase its difficulty. Simplifying the maintenance of all around security are (a) the need to monitor distances no greater than 3,500 meters and (b) the general lack of terrain features and vegetation that could obstruct views. On the other hand, there is no thermal imaging system to aid in the search. Also, the crew cannot view the terrain from open hatches using binoculars. Instead, they must use vision blocks that have relatively narrow horizontal fields of view and that must be rotated.

Traveling Overwatch Drill

Most of the comments pertaining to traveling pertain also to traveling overwatch. There are observations, however, that are unique to the traveling section and overwatch section. The traveling section normally moves on covered and concealed routes. Because vegetation is sparse and the terrain is relatively level, there are few covered and concealed routes on SIMNET. If a route is found that may possibly provide cover and concealment, the crews may be unable to determine whether or not the route is adequate.

The overwatch section at times may need to pause in a hull-down position to provide stationary overwatch. Finding an adequate hull-down position is virtually impossible on SIMNET due to lack of terrain features and vegetation. Moreover, the lack of a GAS and the inability to dismount makes it virtually impossible for a crew to determine when the tank is in a hull-down position. The overwatch section must continuously observe the movement of the traveling section and watch the dominating terrain. The lack of a TIS and limited vision blocks to act interfere with the performance of this activity, while the unobstructed view resulting from the lack of vegetation and terrain features facilitates the performance of the activity.

Bounding Overwatch Drill

Before moving by bounding overwatch, the platoon leader must identify the initial and subsequent overwatch positions. The platoon leader must orient his map, however, before he can identify these positions. The platoon leader cannot orient his map on SIMNET as he would in the field because there are few distinguishing terrain features or vegetation on the SIMNET terrain that can be used for map-terrain association. The fact that the platoon leader must orient his map from the closed hatch mode complicates the task even more. Although the platoon leader cannot use a compass on SIMNET, he can use the grid azimuth indicator to help orient his map.

It is virtually impossible for the platoon leader to identify defilade positions or covered and concealed routes either from the map or from viewing the terrain. When it is necessary for the platoon leader to communicate with the platoon, he must rely on the radio because hand-and-arm signals cannot be given. When the overwatch section arrives at its initial overwatch position, the platoon occupies covered and concealed positions and orients its guns at suspected opposing force (OPFOR) positions. The problems associated with finding defilade positions have already been described. Orienting the guntubes also has problems associated with it because the activity requires the use of the turret-to-hull reference system display, a technique that is never used on an actual tank. Once it is in position with its guntubes oriented, the overwatch section observes the terrain while the bounding section moves. Lack of an open hatches, the lack of a thermal imaging system, and restricted views from the vision blocks limit the ability of the crews to overwatch the bounding section. On the other hand, the lack of vegetation and terrain features provide few areas for the OPFOR to hide. As the platoon continues to move, these activities would be repeated and the same comments would apply.

Change of Formation Drill

A change of formation drill is used to train platoons to change from one formation to another while moving. The SIMNET capabilities and limitations affecting the performance of this drill are identical to those affecting the other drills involving platoon movement. Of particular significance are the problems associated with selecting the most appropriate movement formation, the difficulty involved in distinguishing among vehicles, difficulties involved in estimating distance and speed, and the limited visibility connected with the use of vision blocks.

Action Drill (Non-Contact)

During an action drill, the platoon practices changing its direction of movement while maintaining the platoon formation. The platoon leader must determine the direction in which the platoon should move, but his view of the terrain is restricted by the limitations in the vision blocks. He must then issue an action drill command, but must use the radio because hand-and-arm signals cannot be issued. Implementing the change in direction is facilitated by the lack of movement cues and the few terrain features that obstruct movement. Maintaining the formation during the change in direction is complicated by the restricted view available to the tank commanders and drivers, the inability to accurately estimate the speed of other vehicles, and the inability to accurately estimate the distance between vehicles.

Actions on Contact Drill

During an actions on contact drill, the platoon reacts to visual contact with the OPFOR or to direct fire received from the OPFOR. The tank observing the OPFOR or receiving direct fire attempts to suppress or destroy the threat. Because machineguns are not simulated on SIMNET, only the main gun can be used. On-board smoke would be employed if needed, but it is not represented on SIMNET. The tank should then seek cover and concealment, and the tank commander should submit a contact report. Cover and concealment, however, cannot be found on the SIMNET terrain. In addition, there are no cues for cardinal direction that can be used by the tank commander to determine the location of the OPFOR for the contact report. The tank commander can, however, use the grid azimuth indicator although this device is not present in an actual tank.

Upon receiving the contact report, the rest of the tanks in the platoon should orient their guntubes in the direction indicated in the contact report. This would necessitate using the turret-to-hull reference system and the grid azimuth indicator, two devices not present in the M1 tank. Upon detecting the OPFOR, the platoon would initiate fire. Again, only the main gun can be fired on SIMNET. The platoon would also search for additional OPFOR targets. The search may be hindered by the restricted view available from the vision blocks and by the inability to rotate the tank commander's and loader's blocks beyond 300°. On the other hand, the search would be facilitated by the unique color of OPFOR vehicles and the lack of obstructions to vision such as vegetation. The platoon may need to employ on-board smoke (which is not simulated on SIMNET) or use fire and maneuver to destroy the OPFOR. At the completion of the drill, the platoon leader should submit a spot report to the company commander or team leader. Because there are no visual cues for determining cardinal direction, the platoon leader is apt to use the grid azimuth indicator for this purpose.

Contact Drill

During a contact drill, the platoon reacts to the presence of the enemy while maintaining the movement formation. The capabilities and problems associated with issuing the order, maintaining the formation, orienting gun tubes, and searching for targets have already been described. Once a target is detected, a tank will have to adjust its position within the formation if the target is masked by one of the other tanks in the platoon. This is facilitated by the lack of vegetation and other obstacles to movement and by

the lack of motion cues. The OPFOR must be engaged using the main gun. Because a contact drill is often performed when the tank is attacked by small arms fire, the lack of machineguns can cause the platoon to respond unrealistically. Once the engagement is completed, the platoon leader will submit a spot report. It may be impossible for the platoon leader to identify the type of OPFOR vehicle that was engaged because of an unclear graphics display. Problems involved in determining cardinal direction have already been discussed.

Action Drill (Contact)

An action drill is generally performed while a platoon is moving in traveling or traveling overwatch formation. When contact is made with the enemy, the platoon may initiate an action drill to face the enemy while searching for a covered and concealed position. The platoon may also take evasive action if it is under fire. Changing direction and taking evasive action is facilitated by the lack of vegetation and terrain features. After orienting the gun tubes toward the front, the platoon must search for target signatures. Although the distinctive color of OPFOR vehicles and the lack of vegetation or terrain features facilitates this search, the limitations in the vision blocks make the search more difficult. Finding and occupying covered and concealed positions is virtually impossible because of the lack of terrain features and the lack of a GAS. The targets are then taken under fire using the main gun and the platoon leader submits a spot report.

React to Air Attack Drill

An air attack drill is conducted in response to an impending attack by enemy aircraft. Because enemy aircraft are not represented on SIMNET, the drill cannot be performed.

React to Indirect Fire Drill

When receiving indirect fire, the tank crews should close the hatches and vision blocks and put on protection masks. Neither the hatches nor the vision blocks can be closed because they are not represented on SIMNET. While protective masks can be put on, they are not an integral part of the SIMNET system. Furthermore, the gas particulate system is not represented on the simulator. If the platoon is moving, it should attempt to maintain its speed and direction while taking evasive actions to avoid indirect fire. The capabilities and problems associated with maintaining speed and direction have been described above. If the platoon is not moving, it should either try to move to cover or concealment out of the impact area or try to move to a turret-down position. Both cover and concealment and turret-down positions are almost impossible to locate on SIMNET terrain. Once the indirect fire stops and a spot report is submitted, the hatches and vision blocks are to be opened, but neither can be opened on SIMNET. The platoon should then check for radiation and chemicals, but neither activity can be performed on SIMNET. The platoon leader should then submit a shell report (SHELREP). Because it is difficult to identify the type of burst and because there are no craters, this information cannot be included in the SHELREP. Upon receiving an all clear from the team leader, the platoon should initiate unmasking procedures. This cannot be done because there is no open hatch mode and there are no radiation or chemical detectors.

Chapter 5. The Simulation of Offensive Missions on SIMNET

Armor operations during the offense were analyzed by identifying the activities that could occur during a movement to contact. Seven sets of activities were examined: (a) mission preparation, (b) activities performed by the movement platoon, (c) activities performed by the overwatch platoon, (d) recon by fire, (e) fire and maneuver, (f) bypass, and (g) hasty attack. Each set of activities was examined further to identify actions performed by the platoon leader, the platoon sergeant, the tank commanders, and the crews. The research staff attempted to perform many of these activities on SIMNET. Attempts could not be made to perform all of the activities because of time constraints. Conclusions made concerning these tasks were based on experiences with similar tasks. The results of these examinations are summarized in Appendix B.

Mission Preparation

Platoon Leader

Offensive missions at the platoon level begin when the platoon leader receives an operations order (OPORD) from the team leader or company commander. The results of the analysis showed that the platoon leader is able to receive and analyze the OPORD, to issue a warning order to the platoon, and to formulate a tentative plan for executing the mission.

The next step requires the platoon leader to conduct a map reconnaissance. Although the terrain visible in SIMNET corresponds to actual terrain at Fort Knox, it is not identical to that terrain. As a result of the discrepancy between the actual terrain and the graphic depiction of that terrain in SIMNET, a special map has been developed for use during SIMNET exercises. The map reconnaissance would be performed using this special map. During a map reconnaissance, the platoon leader must be able to identify the terrain features corresponding to the control measures to be used during the mission. Although these features can be identified during the map reconnaissance, not all aspects of a map reconnaissance can be performed on the SIMNET map in the same way that they would be performed on an actual tactical map. For example, covered and concealed routes cannot be identified as they would be on an actual tactical map because the terrain displayed in SIMNET (and hence the terrain shown on the SIMNET map) lacks the features and vegetation that provide cover and concealment. Similarly, fields of fire and observation cannot be identified as they would be on a tactical map because unobstructed fields of view and fire are available at almost all terrain locations. Nor can obstacles be identified as they would on a tactical map because the SIMNET terrain contains few natural obstacles and no reinforced obstacles or minefields. Although it would be possible to increase the realism of the map reconnaissance by using an overlay to show reinforced obstacles and minefields, the reinforced obstacles and minefields would have no actual counterpart in the SIMNET world. As part of the map reconnaissance, the platoon leader should identify a vantage point that can be used for a physical reconnaissance. The selection of a vantage point using the special SIMNET map cannot be performed as it would on an actual tactical map because the SIMNET terrain (and hence the SIMNET map) contains few, if any, locations that obstruct vision. As part of the map reconnaissance, the platoon leader should select locations for changing movement techniques and movement formations. Again, the selection of these locations cannot be performed as it

would on an actual tactical map because the SIMNET terrain (and hence the SIMNET map) contains few, if any, locations in which the terrain features would cause the platoon to change its movement formation or its movement technique.

As part of the map reconnaissance, the platoon leader may be required to develop a plan for a physical reconnaissance, a task which he should be able to perform. However, because crewmen cannot dismount the SIMNET M1 and because there are no hatches to be opened, the physical reconnaissance must be conducted from within the vehicle using the built-in vision devices. Although there are circumstances in which a platoon leader might conduct a physical reconnaissance from a tank in the closed hatch tank mode, he is much more likely to conduct a physical reconnaissance on foot, from a tank in the open hatch mode, or from a totally different vehicle. As a consequence, the platoon leader is not apt to conduct the physical reconnaissance on the SIMNET battlefield as he would on an actual battlefield. By having to view the battlefield from the vision blocks, the visual limitations imposed by the vision blocks could affect the observations made during the physical reconnaissance. Furthermore, because map-terrain association is difficult on the SIMNET M1, the platoon leader would probably have to rely on the grid azimuth indicator to orient his map.

During movement to the vantage point, there will be little opportunity to use covered and concealed routes. Upon reaching the vantage point, security elements cannot be posted because soldiers cannot dismount the SIMNET M1. One of the tasks that the platoon leader must perform after he orients his map is to identify the sectors of operation. Because there are few terrain reference points on the SIMNET battlefield that can be used for map-terrain association, the platoon leader would probably once again have to rely on the grid azimuth indicator to identify these sectors. One reason for conducting a physical reconnaissance is to enable the platoon leader to determine the adequacy of his tentative plan and, if necessary, to revise the plan. Because little information can be obtained from the physical reconnaissance, it should be unlikely that the platoon leader would have to alter his plan. Once the platoon leader completes the physical reconnaissance, he should return to the platoon using covered and concealed routes.

After he returns to the platoon, the platoon leader will review the fire support plan for the mission, prepare a platoon OPORD, and issue the OPORD. All of the activities can be performed on the SIMNET M1. During the remainder of the time available for mission preparation, the platoon leader would normally supervise precombat inspections. Because the crewmen can inspect only the equipment that is simulated on the SIMNET M1, many aspects of this task cannot be performed on SIMNET.

Platoon Sergeant

During the preparation for the mission, the platoon sergeant would establish priorities for maintenance and resupply and would supervise these activities. The platoon leader would take the age and condition of the vehicles into account when establishing maintenance priorities. The age and condition of the SIMNET M1 vehicles, however, is specified during initialization of the system. Even if this information were to be made

available to the platoon sergeant prior to the performance of the task, it could not be based on his previous experience and knowledge of the vehicles.

Once the platoon sergeant establishes priorities for maintenance and resupply, he would normally supervise the preparation for the mission. However, most of the activities involved in mission preparation either cannot be performed at all on the SIMNET M1 or else they are performed in a manner that is unique to the simulator. Thus, the platoon sergeant would not supervise these tasks as he would in an actual M1 tank. In addition, the crews cannot perform preventive maintenance checks and services (PMCS) nor most pre-fire operations. The platoon sergeant, therefore, could not practice the supervision of these tasks. Finally, because refueling the vehicles and resupplying them with ammunition resupply are performed in a unique manner, the platoon sergeant would be unable to perform these asks as well.

A task that the platoon sergeant can perform on SIMNET is to help the platoon leader prepare the OPORD.

Tank Commanders

During the preparation for the mission, the tank commanders will receive a warning order from the platoon leader and will later receive an OPORD. Both of these activities can be performed on SIMNET. The tank commanders will brief their crews on the impending mission, another activity that can be performed on SIMNET.

Crews

When the crews receive their warning order, they must assume the proper security readiness condition (REDCON). The crews cannot establish and maintain security on SIMNET as they would in the field because they cannot dismount their vehicles. Thus, observation posts cannot be established or maintained. To prepare for the mission, crews are to perform PMCS and pre-fire operations. They must also refuel and resupply the tanks, and conduct radio checks. PMCS and most pre-fire operations (e.g., boresighting the gun, stabilizing drift) cannot be performed on the SIMNET M1. In addition, there are some systems that are not represented on SIMNET M1 (e.g., the muzzle reference system, ballistics computer, thermal imaging system, and machineguns). Certain activities, such as refueling and ammunition resupply, are simulated, but these activities are performed in ways that are unique to SIMNET. Although crews can conduct radio checks on SIMNET, the radio and intercom have been modified. Once the crews have completed their preparation for the mission, they are given an opportunity to rest prior to the start of the mission--an activity that can be simulated on SIMNET. In addition, the crews are able to receive a briefing from their tank commanders on the platoon mission.

Movement to Contact: Movement Platoon

Platoon Leader

During a movement to contact, the platoon leader of the movement platoon selects a covered and concealed route to the objective. To perform this task, the platoon leader will use information obtained from his map and as well as from direct observation of the terrain. Finding such a route can be

impossible because both the map and the visual display lack the vegetation and other terrain details that provide cover and concealment. The problem for the platoon leader is compounded by his inability to view the terrain except through the use of vision devices. When the platoon leader does select a route, the information that he uses and the procedure that he adopts for processing the information and selecting the route would probably differ from the information and procedure that he would use in the field. The platoon leader also must identify the line of departure. Due to the scarcity of distinguishing terrain features and the restrictions in the visual display, it is likely that the platoon leader would use the grid azimuth indicator to help locate the line of departure. Thus, the platoon leader may perform this activity on SIMNET in a way that differs substantially from the way he would perform the activity in the field.

The platoon leader may also select an appropriate movement technique and movement formation to be used by the platoon. This selection would be based on both the tactical situation and the nature of the terrain. Although the tactical situation may be the same on SIMNET as it would be in the field, the terrain is likely to be quite different. Because almost any movement formation can be executed on the relatively featureless SIMNET terrain, the importance of terrain as a factor in the selection of a movement formation and a movement technique is greatly reduced. Any formation and any technique can be implemented almost anywhere in the SIMNET world. Thus, a platoon leader who learns to select a movement formation and a movement technique on SIMNET may ignore the impact of the terrain in making this selection. Moreover, once the platoon leader makes his selection, he cannot issue an appropriate hand-and-arm-signal. Consequently, he must rely on the radio even when its use is inappropriate.

The platoon leader of the movement platoon is responsible for establishing the direction and speed of movement for the platoon. Because the visual display lacks sufficient cues required for establishing direction of movement, the platoon leader is likely to use the grid azimuth indicator for this purpose. The grid azimuth indicator, however, can only be used from a stationary vehicle. The platoon leader will therefore have to stop his vehicle in order to establish or check direction of movement, an action he is not apt to take in the field. A more serious problem is that he will be establishing direction of movement using a device, the grid azimuth indicator, that is not available on the M1 tank.

In addition to establishing the direction of movement, the platoon leader must establish the speed of movement. Because the speedometer located in the driver's compartment will indicate the speed of simulated movement, the platoon leader can establish the actual speed of movement by requesting this information from the driver. In an actual tank, however, there are numerous cues available to the platoon leader that would make it unnecessary for him to rely on the driver for this information. Many of these cues stem from the actual motion of the vehicle, but none of these cues are available to him on SIMNET M1 because the simulators themselves do not move. The platoon leader is therefore apt to rely on visual cues in order to estimate the speed of movement. Because the open hatch mode is not simulated, the platoon leader would look through the vision blocks for these cues. As a consequence, the platoon leader would have to judge the speed of movement from a subset of the cues that would be available to him in the field. Because this subset never occurs alone in an actual M1 tank, the platoon leader would judge the speed of

movement in a way that is unique to the simulator. Unless the platoon leader learns the actual speed of simulated movement from the driver, he is not apt to know the accuracy of this speed estimation. Complicating the situation for the platoon leader is the fact that are few terrain features that obstruct movement in the SIMNET world. Without the presence of cues stemming from actual motion and without obstacles to movement, there is a tendency for the platoon leader (as well as for the drivers) to move their vehicles faster in the SIMNET world than they would in actual tanks. Complicating the problem even further are the lack of realistic visual cues that would enable the platoon leader to estimate the speed of the other vehicles in the platoon.

The platoon leader normally leads his platoon to the objective following a covered and concealed route. Although he can lead his platoon to the objective on SIMNET, it is unlikely that he can follow a covered and concealed route because there is too little vegetation and too few terrain features to provide the necessary cover and concealment. During movement, the platoon leader is to report to the team leader when the platoon crosses the line of departure. Assuming that the line of departure is sufficiently recognizable, the platoon leader will be able to report this information to the team leader. During movement, the platoon leader must also monitor the location of his platoon, but it may not be possible for him to perform this task using terrain association because there are few identifiable terrain features in the SIMNET world. The platoon leader, however, can determine the location of his platoon using the odometer. Knowing both the distance that the platoon has moved and the direction in which it has moved, the platoon leader can calculate the location of the platoon. Because SIMNET lacks common directional cues such as the location of the sun and shadows, it first may be necessary for the platoon leader to stop his vehicle and to determine direction using the grid azimuth indicator. It would then be necessary for him to determine the distance traveled by asking the driver to read the odometer.

During movement toward the objective, the platoon leader may receive additional instructions from the team leader to which he must react. Although he can receive these instructions on SIMNET, he will be unable to relay these instructions to the rest of the platoon using hand-and-arm signals. Instead, he will have to relay them using the radio.

During movement, the platoon will move to or pass various locations used as control measures. These locations will be marked on his map using appropriate graphic symbols. The platoon will be required to report when he arrives at or passes these locations. This will require the platoon leader to orient his map, a task that is normally performed using terrain association. The platoon leader may be unable to orient his map in this way, however, because there are few distinguishing terrain features shown on the SIMNET map or appearing on the SIMNET display. The platoon leader may once again have to rely on the grid azimuth indicator to assist him in orienting his map. Once the platoon leader orients his map, he should be able to recognize each control measure as the platoon passes its location provided that there is a distinguishing feature characterizing the location (e.g., a road intersection). If the location lacks any distinguishing characteristic, the platoon leader may be unable to identify it as the location of the control measure. If the platoon leader is able to identify the location of a control measure, it will be possible for him to report this information to the team leader.

As the platoon moves to the objective, the platoon leader may have to control preplanned fires. To perform this task, the platoon leader would have to use the vision blocks to identify locations that were selected for indirect fire. The scarcity of identifiable terrain features may cause this task to be impossible to perform. If the platoon leader is able to identify the target, and if it is necessary for him to adjust fire, he must calculate an observer-target (OT) line. Because there are few directional cues available in SIMNET, the platoon leader would use the grid azimuth indicator to determine the OT line. Because a grid azimuth indicator is not available on an M1 tank, the task would not be performed on SIMNET as it is on the actual battlefield.

During movement toward the objective, the platoon leader may also have to issue a spot report (SPOTREP). The following mnemonic device is used to assist the platoon leader remember the information to be contained in the SPOTREP:

S - size or number of personnel and vehicles that were observed

A - activity that the enemy is performing

L - location of the enemy

U - enemy unit

T - time the enemy was observed

E - enemy equipment that was observed.

Although the platoon leader can send a SPOTREP informing the team leader that he has observed the enemy, it will not be possible for the platoon leader to obtain all of the information specified by the SALUTE format. Because personnel are not simulated on SIMNET, their number cannot be observed or reported. Similarly, the activities that can be observed are limited to those that can be performed by vehicles without dismounted troops. It may be impossible for the platoon leader to determine the location of the enemy because the display lacks identifiable terrain features. It will be impossible for the platoon leader to identify the enemy unit that was detected, although it may also be virtually impossible to perform this task on an actual battlefield. The platoon leader will be able to report the time at which the enemy was detected as long as the simulation time is identical to actual clock time. However, the platoon leader may be unable to identify the types of vehicles that were detected because the display lacks sufficient clarity.

Platoon Sergeant

The platoon sergeant in the movement platoon must monitor and control the movement of his section as well as its formation. To be able to judge the speed of his tank without access to a speedometer, and to be able to judge the speed of his wingman's tank, the platoon sergeant requires various cues such as motion cues (e.g., vibrations, inertia) and visual cues (e.g., the speed with which nearby objects appear to move relative to objects that are far away). Because there are no motion cues available in SIMNET and because the visual cues available through the unity vision blocks differ from those that are available in a tank (especially with open hatches), the platoon sergeant

cannot judge the speed of the two tanks on SIMNET as he would on the actual battlefield. Consequently, it may not be possible for the platoon sergeant to accurately monitor or control the speed of his section.

In addition to monitoring and controlling the speed of movement, the platoon sergeant must also monitor and control the relative positions of the two tanks within the section and the position of the section within the platoon. To control the relative positions of the tanks within the section, the platoon leader must be able to judge the distance between the tanks. Because the tanks have no distinguishing features, the platoon sergeant may not be able to recognize his wingman if the tanks within the platoon are not in their proper positions. Although the platoon sergeant can ask the wingman to turn his guntube or to perform any unique action that would make him distinguishable, this is not an action that he would have to take on the actual battlefield.

Once the platoon sergeant identifies his wingman, he may have to judge the adequacy of the wingman's position relative to his own. Because there are no open hatches on SIMNET, the platoon sergeant would have to make this judgment using the unity vision blocks. The use of the vision blocks for this purpose causes the task to be performed differently than the way it would be performed in the field. For example, if the turret is oriented so that the guntube is pointing to the front, the platoon sergeant would have to traverse the turret to see to the rear. In addition, distances cannot be accurately judged from the vision blocks. If it is necessary for the platoon sergeant to communicate with his wingman to control the wingman's movement or position within the section, the platoon sergeant would have to communicate by radio because hand-and-arm signals cannot be given on SIMNET. This could cause the platoon sergeant and the tank commanders to rely on the radio for communications. Because the platoon would often move under radio listening silence, overreliance on the radio in SIMNET could possibly lead to negative transfer in the field.

Tank Commanders

The difficulties involved in monitoring and controlling platoon and section movement that were described above are shared also by the tank commander.

Crews

Each tank within the platoon must move using the appropriate technique and must maintain its place within the platoon formation. The capabilities and limitations involved in performing movement technique and formation drills have been described elsewhere. Once in formation, each tank in the platoon must assume the proper direction and speed, and must maintain the proper interval. Because the other tanks in the platoon do not have distinguishing features and appear to be identical, the driver may not be able to determine the tank's proper place within the formation. The relatively narrow horizontal field of view available to the driver on SIMNET (60°) compared to the view in a real tank (170°) may cause the driver to be overly dependent upon feedback from the tank commander in order to maintain the proper position of the tank within the platoon formation.

Tank movement is not controlled in the SIMNET world as it is on actual terrain because the simulated terrain is smoother than the battlefield and because SIMNET contains few, if any, obstacles to movement. In addition, the lack of physical movement cues on SIMNET could result in faster speeds than would normally occur on the battlefield. Because speed cannot be adequately judged from the visual cues available in the vision blocks, crews driving at excessive speeds may not be aware that they are driving at a unrealistically high speed. Although the driver can use the speedometer to determine the simulated speed of the vehicle, the driver must lean forward to read it, an action that the driver may not be apt to perform often enough to maintain the proper speed.

Because judging distances between tanks is also difficult, the tank commander may use the laser range finder to make a more precise determination of distance. Although this procedure is obviously not dangerous on SIMNET, it could possibly result in an unsafe habit that would have dangerous consequences in the field.

Proper movement of the platoon requires the use of covered and concealed routes. Such routes are almost impossible to find because of the lack of vegetation and the evenness of the SIMNET terrain. During movement, the crews are also required to maintain ground and air security. The lack of an open hatch mode, limitations resulting from the unity vision blocks, and a scarcity of terrain features and vegetation cause the task to be performed in a unique manner on SIMNET.

Movement to Contact: Overwatch Platoon

Platoon Leader

After receiving a fragmentary order (FRAGO) from the team leader, the platoon leader must determine where on the battlefield OPFOR contact would be likely to occur. Because SIMNET does not have an open hatch mode, the platoon leader is unable to view the terrain directly. Similarly, because soldiers cannot dismount on SIMNET, the platoon leader is unable to examine the terrain on foot. Instead, he must view the terrain using the unity vision blocks or else perform a map reconnaissance. Neither the view from the unity vision blocks nor the map provides enough detail to enable the platoon leader to identify likely enemy positions. Thus, contact may be expected at almost any location, and little training value can be expected in terms of identifying likely OPFOR positions.

Once the platoon leader identifies likely enemy positions, he must select a covered and concealed position from which the platoon can overwatch the bounding platoons. Again, the inability to view the terrain from open hatches or to dismount the vehicles makes it difficult to select an adequate overwatch position. In fact, there is so little vegetation and so few terrain features that the platoon leader will probably be unable to locate covered and concealed positions for the platoon. Once overwatch positions are selected, the platoon leader will probably be unable to select covered and concealed routes into these positions.

The platoon leader of the overwatch platoon must control the platoon's movement to the overwatch position. The degree to which the performance of this task parallels its performance on the battlefield has been discussed in

the section of the report dealing with the movement platoon. Once the platoon arrives at the overwatch position, the platoon leader must assign overwatch sectors to each of the tanks. The platoon leader may not be able to adequately assign these sectors because there are few distinguishing terrain features to define the boundaries. The inability of the platoon leader to dismount and to point out the sectors eliminates an alternative method for performing this task. In order to perform this task, the platoon leader may be required to use the grid azimuth indicator to determine the location of sector boundaries and to communicate this information to the other tank commanders. Although the platoon leader would not be able to use this method on the actual battlefield, he may be unable to avoid using it on SIMNET. Once the platoon is in position, the platoon leader would have to report this information to the team leader by radio because hand-and-arm signals cannot be given.

If suppressive fires are necessary, only the main gun is available because machineguns are not represented on SIMNET. This is another potential source of negative transfer because it may lead to overreliance on main gun engagements. If it is necessary for the platoon to move to subsequent overwatch positions, the platoon leader must once again select an appropriate route and assign sectors of observation upon arriving at the new position. The description of platoon leader's role in moving to the overwatch position applies to movement to subsequent overwatch positions as well.

Platoon Sergeant

The platoon sergeant is responsible for monitoring the movement of his section. A description of this task and its simulation on SIMNET was contained in the section of the report pertaining to the movement platoon. Once at the overwatch position, the platoon sergeant is responsible for adjusting the location of the section, the positions of the tanks, and the sectors of observation. The description of the performance of these tasks by the platoon leader pertains to the platoon sergeant as well. In addition to the performance of these tasks, the platoon sergeant must monitor ammunition expenditure and must monitor the platoon net. Both of these platoon sergeant tasks can be performed on SIMNET.

Tank Commanders

After acknowledging the platoon leader's FRAGO, each tank commander must monitor the movement of his tank and its position within the platoon formation. The performance of this task on SIMNET has already been described. Once the tank arrives at the overwatch position, the tank commander must identify the position assigned to his tank and his sector of observation. This task cannot be perform on SIMNET as it is on an actual battlefield because the SIMNET battlefield contains few distinguishing terrain features and because the tank commander must view the terrain using the unity vision blocks due the lack of an open hatch mode. Once the tank is positioned, the tank commander cannot signal the platoon leader because hand-and-arm signals cannot be sent.

The role of the tank commander in selecting alternate firing positions and in identifying subsequent positions on SIMNET has already been discussed. Any observations made from the overwatch position or any engagements can be reported by the tank commander to the platoon leader.

Crews

The activities performed by the tank crews during movement to the overwatch position are similar to those performed by the crews in the movement platoon during movement to the objective. Because the performance of these activities has already been discussed, it will not be described here. Once the crews arrive at the overwatch position, they must move their tanks into hull-down positions. It is virtually impossible for the crews to find hull-down positions on the SIMNET battlefield because of the scarcity of terrain features and because the required elevation data is not coded in sufficient detail in the SIMNET database. Moreover, the lack of a GAS makes it impossible for the crews to determine when the tank is actually in a hull-down position. Once a tank is in an overwatch position, its crew must observe the terrain that dominates the axis of movement of the bounding element. The lack of terrain features and vegetation provides an unobstructed field of view that is unrealistic. The lack of a TIS prevents the crew from using the thermal sight while searching for targets. If targets are detected by a crew, the crewmembers may not be able to adequately identify them because the graphics lack sufficient clarity.

If it is necessary for the crews to engage targets, they can only use the main gun because the machineguns are not simulated. Furthermore, neither degraded mode gunnery nor the TIS are simulated. If the crews are ordered to adjust their sectors of observation, they cannot make the adjustment as they would on an actual battlefield because of the lack of distinguishing terrain features and their inability to mark the sectors. When the crews are ordered to displace, the vehicles can back out, but the crewmembers cannot see to the rear if the gun tube is pointed toward the front.

Recon by Fire

Platoon Leader

If the platoon leader decides that it is necessary for the platoon to conduct reconnaissance by fire, he must ask the team leader for permission. Once he receives permission to recon by fire, the platoon leader must identify locations where the OPFOR is likely to be hidden. The performance of this task on SIMNET is affected by the lack of an open hatch mode and by limitations in the unity vision blocks. The performance of this task is also affected by the lack of cover and concealment and the scarcity of terrain features because it unlikely that there will be any positions where the enemy can hide. An additional problem concerns the selection of an overwatch position that will provide both adequate cover and adequate fields of view. Almost any position will provide unrestricted views, but no cover or concealment. Given the nature of the terrain available on the SIMNET battlefield, there may be few, if any, opportunities to adequately simulate the activities performed by the platoon leader during reconnaissance by fire .

Once the platoon leader has selected an overwatch position, however, he must issue a FRAGO and lead the platoon to the position. The capability to perform this task has been described earlier. When the platoon is in position, the platoon leader may request indirect fire on possible OPFOR locations. Because distance estimations on SIMNET are frequently inaccurate, it may not be possible for the platoon leader to adequately correct range and deflection errors. In addition, because the terrain is not affected by

artillery bursts, the platoon leader cannot determine where the rounds land unless he sees them burst. If the platoon conducts the reconnaissance by fire using direct rather than indirect fire, only the main gun can be fired because machineguns are not simulated. After conducting reconnaissance by fire, the platoon leader should report the results to the team leader, a task which he can perform on SIMNET.

Platoon Sergeant

During recon by fire, the platoon sergeant monitors his section when moving to the overwatch position. The performance of this task on SIMNET has been described earlier. If the platoon conducts the reconnaissance by fire using direct rather than indirect fire, the platoon sergeant monitors the expenditure of ammunition.

Tank Commanders

Each tank commander controls the movement of his tank when moving to the overwatch position. This performance of this activity on SIMNET has been described earlier. When firing has been completed, the tank commanders should report the results to the platoon leader. Their observation of the result is restricted to the use of the unity vision blocks because the open hatch mode is not simulated. The tank commanders must also report to the platoon sergeant the amount of ammunition they expended during the reconnaissance by fire. The nature of this task is altered by the presence of indicator lights on the ready rack panel.

Crews

Simulation of movement, the observation of OPFOR activity, and firing have been described earlier.

Fire and Movement: Movement Platoon

Platoon Leader

After receiving a FRAGO from the team leader, the platoon leader acknowledges the order and identifies the location of the assigned objective. Assuming that the objective is within line of sight, the platoon leader must identify its location using the unity vision blocks because the SIMNET M1 lacks an open hatch mode. The scarcity of distinguishing terrain features may prevent the platoon leader from accurately determining the location of the objective. Once the platoon leader determines the location of the objective, he must select an covered and concealed route to the objective, select an appropriate movement formation and technique, and control the platoon's movement to the objective. The capability to perform these tasks on SIMNET have been described earlier. During movement toward the objective, the platoon leader may be required by the situation to use on-board smoke. Although the platoon leader can issue the order, it cannot be implemented because SIMNET does not simulate smoke.

Platoon Sergeant

During movement toward the objective, the platoon sergeant is responsible for monitoring the movement of his section. The capability of the platoon sergeant to perform this task has been described earlier.

Tank Commanders

During movement toward the objective, the tank commanders are responsible for controlling the movement of their tanks. The capability of the tank commanders to perform this task on SIMNET has been described earlier.

Crews

The capability of the crews to move to the objective and maintain ground and air security have been described earlier. During movement, the gun tube is to be oriented toward known or suspected enemy locations. Because the normal cues concerning the orientation of the gun tube are not present, the turret-to-hull reference system display must be used to determine the position of the gun tube.

Fire and Movement: Fire Support Platoon

Platoon Leader

After acknowledging the team leader's FRAGO to support the movement element, the platoon leader should assign positions to the tanks in the platoon. The assignment of adequate positions may not be possible on SIMNET because there are few distinguishing terrain features and because the platoon leader cannot dismount his vehicle to point out the positions to the tank commanders. Upon receiving the fire order from the team leader, the platoon leader must issue a platoon fire command. Because machineguns are not simulated, the platoon can only fire the main gun. This creates two major problems. The first problem is that it forces the platoon leader to order the main gun to be used against targets for which the machineguns are more appropriate. The second is that it forces the platoon leader to use the main gun to reconnoiter by fire. This task would normally be performed using the machineguns because using main gun rounds for this purpose would be wasteful. Once a target is detected, however, firing at it using main gun rounds would be appropriate. As the platoon fires, the platoon leader must monitor the effects and may adjust either the fires or the positions of the tank.

Platoon Sergeant

The platoon sergeant is responsible for adjusting fires and/or tank positions, as necessary. The same problems that would be experienced by the platoon leader would also be experienced by the platoon sergeant. In addition, the platoon sergeant would monitor expenditures of ammunition.

Tank Commanders

The tank commanders would be responsible for identifying their assigned tank positions. The difficulties involved in performing this activity have been described earlier. In addition, they would report ammunition expenditures to the platoon sergeant.

Crews

Although the crews are to occupy hull-down positions, these positions are scarce and are not likely to be found. Moreover, once the tank is in a possible hull-down position, the crew cannot verify that the tank is in this position because the GAS is not present on SIMNET and because the crew cannot dismount the vehicle. If it is necessary to adjust the position of a tank, this cannot be accomplished because there is too little vegetation and too few terrain features to provide cover and concealment. Moreover, it is impossible for any members of the crew to dismount in order to direct the positioning of the vehicle. The capabilities and limitations involved in observing within an assigned sector and delivering suppressive fires have been discussed earlier.

Bypass

Platoon Leader

After the platoon leader receives and acknowledges the FRAGO to conduct a bypass, he issues a FRAGO to the platoon. The platoon leader may be required to specify the OPFOR location that will be bypassed. There are several ways in which the platoon leader can accomplish this task. He can, for example, provide the tank commanders the grid coordinates for the OPFOR location. However, because there are few identifiable terrain features that enable the tank commanders to use terrain association, the coordinates may not adequately communicate the location. Another method is to fire the machinegun at the OPFOR location enabling the tank commanders to see the tracers. Because machineguns are not simulated on SIMNET, this method cannot be used. An alternative method is for the tank commander to use the grid azimuth indicator to determine the relative location of the OPFOR position. Although this may be an effective way in which to specify this location, it is a method that is unique to SIMNET and cannot be used in the field. Thus, there may not be an adequate method that can be used by the platoon leader to communicate the location of the OPFOR position to his tank commanders.

The platoon leader must next select a covered and concealed route on which to bypass the OPFOR position. Because there is little vegetation and few terrain features, it will almost impossible for the platoon leader to find an adequate route. If it is necessary for the platoon leader to request indirect fire on the OPFOR position, the platoon leader would probably use the grid azimuth indicator to determine the observer-target line. Because this device does not exist in an actual tank, the platoon leader would use a map and a compass to determine the observer-target line.

If smoke is required to conduct the bypass, the platoon would generally wait for a smokescreen. Because smoke is not simulated on SIMNET, the platoon would have to conduct the bypass without the smokescreen. Once the platoon initiates the bypass, the platoon leader must control the movement of the platoon over covered and concealed routes. The problems involved in controlling the movement of the platoon and in locating covered and concealed routes have already been discussed. Upon completing the bypass, the platoon leader is to submit a SPOTREP to the team leader.

Platoon Sergeant and Tank Commanders

During the bypass, the platoon sergeant and the tank commanders are to monitor the movement of their section or tank. The problems involved in monitoring section or tank movement have been described earlier.

Crews

The problems involved in tank movement and in maintaining movement security have been described earlier. If the tanks must fire at tne OPFOR during movement, they are limited to the use of the main gun.

Hasty Attack: Assault Platoon

Platoon Leader

Upon receiving and acknowledging a FRAGO, the platoon leader identifies the designated objective, determines the last covered and concealed position before the objective (i.e., the assault position), and selects a covered and concealed route to this position. The capability of the platoon leader to identify positions from a closed hatch vehicle on terrain having few distinguishing features has already been described. The platoon leader then initiates and controls movement to this position. The control of platoon movement on SIMNET has also been described earlier.

When the platoon is at the assault position, the platoon leader must decide whether or not the objective is defensible. Because of the relative lack of cover and concealment and the few terrain features, almost no terrain is defensible. If the objective is not defensible, the platoon leader must then select defensible positions behind or to the flanks of the objective, a task which is also impossible to perform. The platoon leader must then select a covered and concealed route along which to conduct the assault. The lack of an open hatch mode forces the platoon leader to select the route using information from the SIMNET map supplemented with observations made through the vision blocks. Because the SIMNET terrain contains few terrain features and little vegetation, it would probably be impossible for the platoon leader to select an adequate route that provides cover and concealment. The platoon leader determines if the platoon should perform any other actions prior to the assault. Finally, the platoon leader should submit a SPOTREP to the team leader and then order the platoon to assault upon receiving the appropriate order from the team leader.

The platoon leader controls the movement of the platoon during the assault. The ability to perform this task on SIMNET has already been discussed. The platoon leader leads the platoon through the objective unless halted by the team leader and will continue until covered and concealed positions are reached. As the platoon crosses the objective, the platoon leader will coordinate with the fire platoon to have fires shifted. The platoon leader is to halt the assault short of cresting high on terrain that provides adequate cover and concealment. Because the SIMNET M1 does not have an open hatch mode, the platoon leader will probably not be able to determine where the terrain crests. Moreover, he is unlikely to find positions that provide adequate cover and concealment due to the scarcity of vegetation and terrain features on SIMNET. Consequently, the platoon leader may be required

to halt the platoon at a position lacking proper cover and concealment. Once the tanks are positioned, the platoon leader then reports to the team leader informing him that the position has been secured.

Platoon Sergeant

During the hasty attack, the platoon sergeant monitors the movement of his section. Once the platoon is on the objective, the platoon sergeant adjusts the positions of the tanks and monitors ammunition expenditures. The capability to perform these activities on SIMNET has been described earlier.

Tank Commanders

After acknowledging the platoon leader's FRAGO, the tank commanders control the movement of their tanks within the platoon formation, adjusting intervals and monitoring speed to maintain the line formation. These activities have been discussed earlier. After reaching the objective, the tank commanders report their ammunition expenditures to the platoon sergeant.

Crews

During the hasty attack, the crews will move their tanks to the assault position using the formation and movement technique specified by the platoon leader. While moving, the crews will maintain all-around movement security. The crews will to occupy hide positions at the assault position prior to moving to the objective. The capability of the crews to perform each of these activities has been described earlier. Once in the hide position on an actual battlefield, the crews may check the vehicle, its weapon systems, and other equipment. The crews will not be able to conduct these checks on SIMNET, however, because the relevant systems are not simulated. The platoon will then continue the assault by moving toward the objective in a line formation, bypassing obstacles and minefields. Because there are few obstacles and no minefields on the SIMNET terrain, they cannot be bypassed. If the platoon receives indirect fire during the assault, the crews are to close their hatches. This task cannot be performed because SIMNET simulates closed hatch vehicles only. Target engagements are limited to the main gun, but they cannot be fired in a degraded mode. Upon taking the objective, the tanks are to stop on a slope without cresting. It may be impossible for the crews to select an adequate position on a slope because the crewmen cannot look through an open hatch. The crews must position their tanks and orient their weapons to prepare for a counterattack. Selecting an appropriate position could be impossible because of the lack of vegetation and terrain features and because of the inability to dismount. The ability of the crews to conduct consolidation and reorganization activities is described elsewhere.

Hasty Attack: Support by Fire Platoon

Platoon Leader

Upon acknowledging the FRAGO, the platoon leader of the support by fire platoon analyzes the order and formulates a plan. He then issues a FRAGO and directs the platoon to move to the overwatch position. When the tanks are in position, the platoon leader reports to the team leader that the platoon is ready to support the assault. All of these activities can be performed on SIMNET. When the team leader orders the assault force to conduct the assault,

the platoon leader of the support by fire platoon may issue a command for alternating fires and later for simultaneous fires. In both cases, the engagements have to be conducted using the main gun because machineguns are not simulated. After reporting the effects of the engagement to the team leader, the platoon leader will have to identify the subsequent overwatch position. The platoon leader may be unable to identify this position because of the lack of distinguishing terrain features and the lack of open hatches. The platoon leader must then select a covered and concealed route to the subsequent overwatch position. This may also be impossible for the platoon leader to perform because the SIMNET terrain has few terrain features and little vegetation. The platoon leader may tell the platoon when and how to break contact and then lead the platoon to the new overwatch position. The capabilities of the platoon leader to lead the platoon to the new overwatch position on SIMNET have been described earlier.

Platoon Sergeant

The platoon sergeant may issue a section fire command, but the command cannot include machineguns because only the main gun is simulated. In addition, the platoon sergeant may reposition the section, but he cannot dismount the vehicle to do so.

Tank Commanders

The tank commanders in the support by fire platoon must identify the positions assigned to their tanks. They may be unable to do so, however, because of the lack of terrain features and because the task cannot be performed without open hatches. After the tanks are in position, the tank commanders must issue fire commands. Because there are no machineguns on the SIMNET M1, the command can pertain only to the main gun. After firing, the tank commanders must report their ammunition status to the platoon sergeant.

Crews

The crews must occupy a turret-down position at the overwatch position. It is unlikely that the crews will be able to locate suitable terrain for a turret-down position because there are few terrain features on SIMNET and because the crews cannot dismount their vehicles or use the GAS to verify the adequacy of their positions. Once in position the crews must observe in their assigned sector. The lack of terrain features and vegetation result in views with virtually no obstructions. However, the crew must view the terrain using the unity vision blocks because open hatches are not simulated. In addition, they cannot view the terrain using the TIS because the system is not represented on SIMNET. Upon receiving a fire order, the crew is to move the vehicle from a turret-down to a hull-down position. Not only are such positions scarce, the lack of the GAS makes it impossible for the crew to confirm that the vehicle has moved into an adequate hull-down position. The main gun must be used to suppress or destroy targets because the machinegun is not simulated.

After engaging the enemy, the crew should move the tank back into a turret-down position. As before, it will be unlikely that the crew will be able to locate an adequate position, and the lack of a GAS will prevent the crew from testing the adequacy of any position selected. Once the tank is in a turret-down position, the crew should monitor the movement of the assault

forces. In an actual M1, the tank commander can monitor the battlefield through his unity periscopes, through his weapon sight, through the GPSE, or from the open tank commander's hatch. Because the tank commander's weapon is not simulated on SIMNET, this alternative will not be available to the tank commander. Similarly, because the open hatch condition is not simulated on SIMNET, this alternative will not be available to the tank commander either. Assuming that the gunner will have a sector of responsibility of his own and will monitor this sector through the GPS, the tank commander would be more apt to monitor the battlefield through the unity periscopes than through the GPSE. Unlike the actual M1 tank in which the unity periscopes provide a 360° view, the unity periscopes in SIMNET provide only a 64° view. Consequently, the tank commander must rotate the cupola in order to control his view of the battlefield. If the gunner turns the turret while monitoring the battlefield, the cupola will turn along with the rest of the turret. This would have little impact on the tank commander in an actual M1 tank because the unity periscopes provide a 360° view. On SIMNET, however, the view in the vision block would change as the gunner rotates the turret. The tank commander must compensate for the rotation of the turret by turning the cupola in the opposite direction. Thus, the activities that the tank commander performs while monitoring the battlefield on SIMNET do not correspond to the activities that he would perform on an actual tank. The tank commander could avoid compensating for the movement of the turret on an actual tank by viewing the battlefield from the unity periscopes or from the hatch. Only by viewing the battlefield from his weapon sight would he have to compensate for turret rotation. There is no way he can avoid having to compensate for turret rotation while monitoring the battlefield on SIMNET. Ironically, the procedure that the tank commander would use on SIMNET comes closer to the procedure he would use if he were viewing the battlefield with his weapon sight, a sight that is not simulated on SIMNET.

As the assault force moves across the objective, the crew may shift their supporting fire to adjacent OPFOR positions. Again, they will only be able to fire the main gun. If the crew is ordered to back out of its position in order to displace to the next objective, the turret would have to be turned in order for the tank commander to see to the rear. In an actual M1, the tank commander could see to the rear even with the gun tube oriented toward the front of the vehicle. If the crew is to move to a new overwatch position, they would use a covered and concealed route. The lack of covered and concealed routes on SIMNET has been already been discussed.

Chapter 6. The Simulation of Defensive Missions on SIMNET

Armor operations during the defense were analyzed by identifying the activities that occur during the preparation of a deliberate battle position, the execution of a platoon defensive mission, and the hasty occupation of a battle position.

Preparation of a Deliberate Battle Position

Platoon Leader

The preparation of a deliberate battle position begins when the platoon leader receives and analyzes an OPORD from the team leader. After receiving the order, he issues a warning order to the tank commanders. Each of these activities can be performed on SIMNET. After analyzing the OPORD, the platoon leader moves to the battle position in order to conduct a reconnaissance. Because the platoon leader cannot dismount the vehicle, he must move the tank to the battle position. Once he arrives at the battle position, the platoon leader should post security elements to provide local security. He cannot perform this task on SIMNET because the crewmen who would comprise the security elements cannot dismount their vehicles.

Once the security elements are posted, the platoon leader conducts a reconnaissance of the battle position. Because the platoon leader cannot dismount the vehicle nor open the hatches, he must conduct the reconnaissance from the tank itself. There are two ways in which the platoon leader can view the terrain--through the vision blocks and through the GPSE. Because the GPSE provides 10 power magnification, the platoon leader would be likely to use this mode were he in an actual tank. On the other hand, during an actual reconnaissance it is also likely that he would dismount the tank or look out of the open hatch in order to view the battlefield with the naked eye or with binoculars. He cannot do either on the SIMNET M1. During the reconnaissance, the platoon leader orients his map by map-terrain association. It is unlikely that he will be able to use this technique to orient his map on the SIMNET M1 because the SIMNET world contains too few distinguishing terrain features. Moreover, during an actual reconnaissance, the platoon leader is apt to use his compass to determine direction. Because a compass cannot be used in the SIMNET world, the platoon leader is likely to use the grid azimuth indicator, a device that is not available on an actual M1 tank.

One reason why the platoon leader conducts a reconnaissance of the battle position is to identify the location of the company battle position. Because of the scarcity of terrain reference points, the platoon leader may be unable to identify the location. The scarcity of terrain reference points may also make it impossible for the platoon leader to identify the company target reference points, company engagement areas, the limits of the platoon battle position, the platoon sector of fire, and the location of artillery preplots. The platoon leader must also identify avenues of approach that are likely to be used by the enemy. This task may also be impossible to perform on SIMNET because almost all areas are trafficable and because the terrain provides little cover that can be used to conceal movement.

During his reconnaissance of the battle position, the platoon leader must determine the adequacy of the position assigned to the platoon. Assuming that the platoon leader is able to identify the position, he will lack much of the information required to judge its adequacy because he can only view the position through the vision blocks or through the GPSE. The platoon leader must also select primary firing positions for the tanks in his platoon. Again, because the platoon leader cannot dismount the vehicle and must view the terrain through the vision blocks or the GPSE, he will probably be unable to obtain enough detailed information about the terrain to select adequate firing positions. Moreover, the selection of adequate firing positions will be made virtually impossible by the lack of terrain features and the scarcity of vegetation that would provide cover and concealment. The lack of terrain suitable for defilade positions also contributes to the futility of the task. It is likely that virtually any position would provide adequate fields of observation and fire, but at the same time, the tanks would be equally vulnerable to enemy fire. In addition to selecting primary firing positions, the platoon leader would also select the supplementary firing positions for the platoon. The problems associated with selecting these positions would be identical to those associated with selecting the primary firing positions.

Assuming that the platoon leader selects both the primary and supplementary firing positions for the platoon, the platoon leader generally marks the positions or draws a sketch map showing their locations. Because it is impossible to mark the SIMNET terrain, the platoon leader would be apt to draw a sketch map. However, the scarcity of terrain features would probably make it impossible for the platoon leader to draw an adequate sketch map or to find the positions upon his return to the area. The platoon leader next selects covered and concealed routes in and out of the primary position and from the primary to the supplementary positions. As has been noted earlier, the lack of terrain features and the scarcity of vegetation make it virtually impossible for the platoon leader to find covered and concealed routes.

During his reconnaissance, the platoon leader selects a location for observation posts that provides a view of the platoon's sector of fire. Almost any location in the vicinity of the battle position would provide such a view due to the lack of terrain features and vegetation. However, because it is impossible to dismount the vehicles, the observation posts cannot be established. Consequently, the platoon leader can select the location for these posts and may even order that the observation posts be established, but the order cannot be implemented on SIMNET. The platoon leader also identifies existing obstacles and selects positions for reinforcing obstacles. There are so few obstacles to movement on the SIMNET terrain that it is unlikely that the platoon leader will be able to identify any. At the same time, there is no way to reinforce obstacles or to lay mines. The platoon leader can select positions for reinforcing obstacles or laying mines and may request that the obstacles be reinforced or that mines be laid, but the order cannot be implemented.

Upon completing his reconnaissance of the battle position, the platoon develops a rough draft of a platoon fire plan and prepares an OPORD. The lack of terrain reference points may make it impossible to identify control measures for the fire plan or to ensure that the tank sectors overlap. On the other hand, the lack of terrain features will virtually ensure that the platoon has unrestricted fields of fire.

Upon returning to the assembly area, the platoon leader issues his OPORD. He will direct the platoon to move to a hide position behind the battle position where the platoon is to execute actions at a halt. When the platoon arrives at this position, the platoon leader would generally specify the location of the observation post. There would be no reason for the platoon leader to perform this activity, however, because the crewmen cannot dismount their vehicles in order to establish the observation post. The platoon leader then moves to the battle position with his tank commanders and observation post personnel. Because it is impossible to dismount the vehicles, the platoon leader, tank commanders, and observation post personnel must move to the battle position in their tanks.

Upon their arrival at the battle position, the tank commanders can view the battlefield only through the GPSE or through the vision blocks. The platoon leader will generally point out the locations he identified earlier during his reconnaissance of the battle position (e.g., company battle position, the platoon's sector of fire, the primary and supplementary positions for each tank). Because the platoon leader cannot mark these locations and because personnel cannot dismount their vehicles, the platoon leader must convey these locations using terrain reference points or grid coordinates. Because there are few distinctive terrain features that can be used for terrain reference points, the platoon leader may have no other option except to convey much of this information using grid azimuths obtained from the grid azimuth indicator. To convey the location of the primary and supplementary positions and the routes between these locations, the platoon leader may be required to move his vehicle to each location or along each route. In short, to convey information on locations that are important to the defense of the battle position, the platoon leader will probably resort to a method that cannot be used on an actual battlefield (e.g., the use of the grid azimuth indicator) or one that he is unlikely to use (e.g., moving his tank to each location).

After returning to their original location behind the battle position, the platoon leader will signal the tanks to move to a hide position behind their primary firing position. Because hand-and-arm signals cannot be given on SIMNET, the platoon leader will probably use the radio to order the tanks to move into these positions. He will probably also use the radio to order the tanks to move first to turret-down positions, to move then to hull-down positions, and finally to shut down their engines. Although the radio may be a more efficient means of transmitting this information to the platoon, the use of hand-and-arm signals would be more appropriate when the platoon did not want to divulge its location. The problem with using the radio for this purpose on SIMNET is that it could result in negative transfer if the platoon leader later relies on radio communications when the use of hand-and-arm signals would be more appropriate.

The platoon leader will consolidate the sketch range cards prepared by each crew in his platoon. The lack of distinguishing terrain reference points may it impossible for the platoon leader to identify control measures or to ensure that the sectors overlap. On the other hand, the lack of terrain features and the smoothness of the terrain will help to ensure that there are unrestricted fields of fire. The platoon leader must also develop a final platoon fire plan. The comments concerning the sketch range card pertain also to the fire plan. In addition, the platoon leader will review the indirect fire plan target list and may request additional targets. To review the list,

the platoon leader must first orient the map. The lack of terrain reference points and the scarcity of vegetation may prevent the platoon leader from orienting the map adequately. As a consequence, the platoon leader uses the grid azimuth indicator to orient the map. This is a technique that is not available to the platoon leader in the field.

Upon completing the platoon fire plan, the platoon leader will send copies to the team leader and to the tank commanders. When the battle position is established, the platoon leader will inform the team leader. Both of these tasks can be performed on SIMNET. However, the platoon leader should also direct the platoon to improve the battle position. While be can issue an order to improve the position, he is unlikely to do so because the order cannot be implemented. The platoon leader should also coordinate with adjacent units, a task that can be performed on SIMNET as long as there are adjacent units participating in the simulated event. Finally, the platoon leader should coordinate with the executive officer and with the attached engineers to reinforce the hull-down positions, to improve the routes between the positions, to improve displacement routes, and to improve the countermobility plan. While the platoon leader can coordinate with the executive officer (XO) if the XO is participating in the simulation, the terrain cannot actually be altered. He will not be able to coordinate with the attached engineers because they are not included in the simulation.

Platoon Sergeant

After receiving the warning order from the platoon leader, the platoon sergeant organizes and supervises resupply. He also supervises the platoon preparation for the mission and maintenance. Although the platoon sergeant can organize and supervise some of the activities pertaining to resupply and maintenance, not all of the activities are performed the same way on SIMNET as they are in an actual M1 tank, and some activities cannot be performed at all. For example, the vehicles can be refueled and ammunition can be transferred to the vehicles, but the procedure requires the use of the AMMO TRANSFER Panel, a panel that is not present in an M1 tank. Thus, to the extent that the platoon sergeant will supervise these activities, he will be supervising the performance of a task that is not performed realistically. Other aspects of resupply (e.g., rations, protective clothing) are not necessarily part of the SIMNET simulation although they can be included with little additional effort.

There are a number of equipment failures that are simulated on SIMNET. These include automotive, fire control, and communications failures that occur randomly; failures resulting from crew errors such as those resulting from running an engine with low oil pressure or with high temperature; and damage resulting from nonlethal hits. The repair of these damages would be performed by company maintenance teams in the simulation rather than by the crews themselves. If these tasks are normally performed by company maintenance teams, the actions of the platoon sergeant in requesting maintenance support may be realistically performed on SIMNET. However, the number of maintenance problems that may appear on the SIMNET M1 is apt to be much less than the number that could occur in an actual tank. Most maintenance tasks that are performed by the crew cannot be performed on SIMNET at all. Because the crewmembers cannot dismount the vehicle, crew maintenance cannot be performed on any part of the tank outside of the turret. In addition, because there are few functioning parts inside the turret, crew

maintenance cannot be performed there either. Consequently, the platoon sergeant will not actually be able to supervise maintenance of the tanks.

The platoon sergeant joins the platoon leader on the objective where he normally directs the observation personnel to establish an observation post. The observations pertaining to the platoon leader's movement to the objective and the establishment of an observation post pertain to the platoon sergeant as well.

After returning to the platoon, the platoon sergeant will prepare the platoon for movement to the battle position. He will assist the positioning of the tanks in primary and supplementary positions. Because the platoon sergeant can neither dismount his vehicle nor look out of the hatch, he must direct the tanks into their positions using the vision blocks (or the GPSE) and the radio. Because the positions cannot be marked and because there are few distinguishing terrain features or variations in terrain, the platoon sergeant may be unable to locate the original positions or to find new positions that are adequate, especially when using the available optics. The need to communicate with the other tanks by radio rather than by signal may lead to overreliance upon the radio in the field.

The platoon sergeant is also responsible for checking the alternate positions selected by each of the tanks. On an actual battlefield, the platoon sergeant may check the marked positions. Because positions cannot be marked on SIMNET, the task cannot be performed in this manner. Instead, it will be necessary for each of the tanks to move to their alternate positions in order to be checked. Because of the lack of distinguishing terrain features, the crews may be unable to find the positions if they happened to be selected earlier. If they were not selected earlier, or if it is necessary to select the positions anew, the crews may not be able to find adequate alternate positions. In any event, the platoon sergeant will be unable to dismount as he normally would in order to check the positions. Instead, he will have to perform the task using the vision blocks or GPSE. The tank optics may not provide enough detail to enable the platoon sergeant to adequately check the positions.

Another responsibility of the platoon sergeant is to collect and check the sketch range cards, a task that he will be able to perform on SIMNET. He may also assist the platoon leader in the preparation of a platoon fire plan. This performance of this task by the platoon leader was described earlier, and the description pertains to the platoon sergeant as well. The platoon sergeant also supervises or coordinates the emplacement of obstacles. Because obstacles cannot be emplaced on SIMNET, the platoon sergeant cannot perform this task. Other tasks normally performed by the platoon sergeant that cannot be performed on SIMNET are to supervise the installation of the hot loop (or wire), supervise the installation of the chemical detectors, supervise the camouflage of the tanks, and coordinate with the company executive XO and attached engineers to improve firing positions, improve the routes between these positions, improve displacement routes, and improve the countermobility plan.

Tank Commanders

After the tank commanders receive the platoon warning order and the platoon OPORD, they will join the platoon on the battle position in order to identify various locations, positions, and sectors. The movement to the battle position on SIMNET and the identification of these locations and positions has already been described. Upon returning from the battle position, the tank commanders will order the drivers to start the tank engines and to move to a hide position behind the primary hide position. The order to start the tank engines is normally given by the platoon leader using hand-and-arm signals. Because hand-and-arm signals cannot be issued on SIMNET, the tank commanders must receive the platoon leader's order by radio. Once the driver begins to move, the tank commander should direct him to the hide position. The tank commander may be unable to find the primary position because of the scarcity of terrain features. Even if the tank commander does find the primary position, however, he may be unable to find an adequate hide position because of the lack of vegetation and the relative evenness of the terrain. Once the tank is in the hide position, the tank commander should orient the crew on the location of a turret-down position. Because the crew members cannot dismount, they must view the position using the available optical system. Because the positions cannot be marked and because there are few distinguishing terrain characteristics, the tank commander may not be able to adequately communicate the location of the position.

When the tank commander and his crew are ready to move into the turret-down position at the primary firing position, the tank commander should signal the platoon leader. Because signals cannot be sent on SIMNET, the tank commander must use the radio to convey this information. The tank commander then directs the driver into the turret-down position. In most cases, the tank commander will be unable to direct the driver into an adequate turret-down position because there are few locations in the SIMNET world that provide the required cover. Moreover, the tank commander will be unable to confirm that the tank is in a turret-down position because (a) he cannot dismount in order to visually check the position and (b) the SIMNET M1 does not have a GAS to use to assure that the hull of the tank in cover.

Once the tank is in a turret-down position, the tank commander should orient the crew on the location of the hull-down position. The comments above concerning orientation on the location of a turret-down position also pertain to orientation on the location of a hull-down position. After signally the platoon leader, the tank commander should direct the driver into the hull-down position. As in the case of the turret-down position, the tank commander will be unable in most cases to direct the driver into an adequate hull-down position. Moreover, the tank commander will be unable to confirm that the tank is out of the turret-down position because the SIMNET vehicle does not have a GAS. In addition, he will be unable to confirm the adequacy of the position because he cannot dismount in order to conduct a visual check.

After orienting the crew on the turret- and hull-defilade positions, the tank commander will brief his crew on the OPORD. He should be able to adequately conduct this task on SIMNET. He would then direct the driver to back down to the hide position. As before, the tank commander may be unable to find an adequate hide position because of the lack of terrain features and the scarcity of vegetation in the SIMNET world. When the sketch range card is completed, the tank commander will direct the loader to deliver the card to

the platoon leader. The tank commander would then coordinate with the other tank commanders in the platoon to ensure that their sectors overlap. The lack of distinguishing terrain reference points may make it impossible for the tank commander to ensure that their sectors adequately overlap. Finally, the tank commanders will establish work/rest cycles for the members of their crews.

Crews

It is the responsibility of selected crewmembers to provide local security at the battle position while the platoon leader conducts a reconnaissance. This task is performed dismounted at an observation post. Because crewmembers cannot dismount on SIMNET, the task would have to be performed from a tank using the vision blocks, the GPS, or the GPSE. Because the crews are also responsible for resupplying their tanks and performing maintenance, tanks are generally not diverted for providing local security for the platoon leader. A preferable method would be for the platoon leader's crew to provide local security. Although this procedure would have the advantage of not diverting any additional tanks for local security, it is not how the activity is normally performed.

During the preparation of the battle position, the tank crews are responsible for conducting resupply and performing maintenance. The SIMNET M1 tanks can be refueled and ammunition can be transferred, but the methods for performing these activities are unique to SIMNET. None of the external activities and very few of the internal activities involved in PMCS can be performed on SIMNET. Few types of maintenance requirements are simulated on the SIMNET M1, and none of the repairs can be performed by the crews. Three maintenance tasks (i.e., repairing thrown tracks, replacing damaged vision blocks, and replacing damaged radio antenna) are repaired automatically without any actions from the crew. Disabled vehicles are repaired by simulated maintenance teams when a maintenance team vehicle is within 20 meters of the disabled vehicle. In summary, the performance of maintenance on SIMNET is too dissimilar to its performance on an actual M1 tank to provide any training benefits.

After the platoon leader returns from his reconnaissance of the battle position, he will order the crews to move to a hide position behind the battle position. The problems involved in finding an adequate hide position have been described earlier. Once a crew positions its tank, it will normally dismount to verify that the position provides adequate cover and concealment and to reposition the tank, if necessary. Because the crewmembers cannot dismount the SIMNET M1, they cannot verify the adequacy of their position. Next, the crews will perform actions at a halt. The comments in the previous paragraph concerning the performance of maintenance pertain also to the performance of actions at a halt.

The crews will later receive an order from the platoon leader to move to a hide position behind their primary firing position. The performance of this task on SIMNET has been described earlier. Once in position, the crews will receive an orientation on the location of the turret-down position. Because positions cannot be marked, and because the vehicles cannot be dismounted, the crewmembers must view the position using the vision blocks or the available gun sights. Due to the lack of distinguishing terrain features, the crewmembers may be unable to adequately identify the position. After receiving an orientation on the location of the turret-down position, each

crew should move its tank into that position. Because the GAS is not simulated in the SIMNET M1 and because the crew cannot dismount the vehicle, the crewmembers may be unable to determine when the vehicle is in the proper position. Regardless, the relative evenness of the terrain may make it impossible for the crew to properly place the tank in a turret-down position.

Once the tanks are in the turret-down position, each crew will scan its sector of fire. Because the crews cannot dismount their tanks nor use the open hatch mode, the crewmembers must scan their sector of fire using the vision blocks, the GPS, or the GPSE. When the GPS or the GPSE is used, the gunner or tank commander will not be able to use the TIS because it is not represented on SIMNET. In addition, the crewmembers will not be able to scan beyond 3,500 meters because the SIMNET graphics system does not represent terrain beyond this distance. After scanning their sector of fire, each crew receives an orientation on the turret-down position and the location of the hull-down position. During the orientation, the crewmembers must continue to view the position using the available vision devices because they cannot dismount nor look out of the hatches. The loader would generally mark the position, but he cannot perform this action on SIMNET. After receiving this orientation, the crews will move into the hull-down position where they will receive an orientation on the position. The scarcity of hull-down positions and the inability to confirm the adequacy of the positions have already been described.

Once the orientation on the hull-down position is completed, the gunner will make two copies of a sketch range card. Although the gunnery would probably use the grid azimuth indicator when preparing the sketch range card, the device is not available on an actual M1 tank. After the gunner completes the sketch range cards, the crew will back the tank into the hide position. The crew will have to turn the gun tube to enable the tank commander or the loader to see to the rear while backing up because their vision blocks do not rotate the full 360°. Once the tank is back in the hide position, the loader will deliver a copy of the sketch range card to the platoon leader. To deliver the card, the loader must leave his simulated tank and walk to the simulated tank occupied by the platoon leader. Because the platoon leader could occupy any of several different tank simulators, and because the simulator occupied by the platoon leader would not be uniquely identified, the loader would have to open each simulator to find the platoon leader. In contrast, if he were on the battlefield, he would be able to readily identify the platoon leader's tank.

The crews would then move to the alternate firing position. If the alternate positions were selected earlier, neither the route to the position nor the position itself could be marked. Because there are few distinguishing terrain features on the SIMNET battlefield, the crews may be unable to find the correct location. Whatever location is chosen, the crews must next select an adequate position at this location. The earlier description of the activities performed at the primary firing position pertain to the alternate firing position as well. After selecting the alternate firing position, the crews would occupy it and then upgrade their sketch range card. Next, the crews would move to the supplementary position, occupy it, make a sketch range card, and mark the position. The earlier description dealing with the primary and alternate firing positions apply to the supplementary position.

Upon completion of the activities at the supplementary position, the crews would return to the hide position behind the primary firing position where they would shut down their engines simultaneously. At this time, the crews would perform a number of tasks to prepare for the defense (e.g., camouflage the tank, clear fields of fire, establish a platoon hot loop), none of which can be performed on SIMNET. The crews would also rehearse for the defensive mission, but the inability to mark the routes and positions would interfere with the conduct of the practice.

Execute a Defensive Mission

Platoon Leader

Upon receiving a SPOTREP from the team leader, the platoon leader will write down the information contained in the report, acknowledge the report, and analyze it. He should then alert the platoon, including the observation post, by sending a SPOTREP. Although he can alert the platoon by sending a SPOTREP to the each of the tanks in the platoon, he cannot alert the observation post because it cannot exist on SIMNET. The platoon leader will direct the platoon to remain in its hide position until the observation post detects the approach of the enemy. Once the enemy is detected, the platoon leader will prepare the platoon to engage. The platoon leader will signal or order the tanks to start their engines and move to the turret-down position. Because the open hatch mode is not simulated, the platoon leader cannot signal the tanks to start their engines or move to the turret-down position. Instead, he must use the radio. The platoon leader will issue a platoon fire command. Because the machineguns are not simulated on SIMNET, the fire command will be limited to the use of the main gun.

When the enemy is detected, the platoon leader will send a SPOTREP to the team leader. Because the SIMNET world contains no directional cues (e.g., position of the sun, shadows) that would enable the platoon leader to determine the direction from which the enemy is moving, the platoon leader is likely to use the grid azimuth indicator, a device that is not available on an actual M1 tank. Because of the indistinct SIMNET graphics, the platoon leader will probably be unable to identify the types of vehicles that were detected. If the team leader does not call for indirect fire on the enemy vehicles, the platoon leader may request it. The platoon leader cannot perform this task as he would on an actual battlefield because he must use the grid azimuth indicator to determine the observer-target line. The platoon leader may also request a fire-for-effect mission using preplotted targets.

It is the responsibility of the platoon leader to determine the optimal time at which to engage the enemy. The platoon leader may not be able to determine an optimal time to engage because distance and speed of movement cannot be judged accurately through the vision blocks or available sights. When the platoon leader judges it to be the optimal time, he will order the platoon to move into a hull-down position and to engage the enemy. Although the platoon may not be able to move into an adequate hull-down position on SIMNET, the platoon leader will be able to give the order. The platoon leader will also coordinate movement to the alternate firing positions so that only one vehicle in a section will move at one time. This platoon leader task can also be performed on SIMNET. During the defensive engagement, the platoon leader may order the platoon to shift to its supplementary position, and, if

so, return to its primary position. These platoon leader tasks can also be performed on SIMNET.

During the engagement, the platoon leader may give additional fire commands. Because only the main gun is simulated on a SIMNET M1, the platoon leader would not give any fire commands pertaining to the machineguns. During the engagement, the platoon leader is also responsible for controlling overkills and the expenditure of ammunition. Because machineguns are not simulated, the platoon would have to fire the main gun in situations where the machinegun is more appropriate. This would cause more rapid expenditure of main gun ammunition. Consequently, it may not be possible for the platoon leader to adequately control ammunition expenditure in situations where the use of the machinegun is warranted. On the other hand, because catastrophic kills are clearly depicted on SIMNET, there should be no tendency for the platoon to continue to shoot at targets that have already been killed. Consequently, the opportunity for the platoon leader to practice conservation of ammunition would be lost.

After engaging the enemy, the platoon leader will order the platoon to move back into a turret-down position. The platoon leader will receive action reports from the team leader, and will send the team leader a SPOTREP. Some of the information included in the SPOTREP cannot be obtained on SIMNET as it is on an actual battlefield. Cues pertaining to direction (e.g., shadows, location of the sun) do not appear in the SIMNET display. In addition, some of the vehicles are hard to identify. On the other hand, the grid azimuth indicator will enable to platoon leader to determine cardinal direction without the use of a compass. If the enemy has been destroyed and no follow-on enemy units have been identified, the platoon leader will direct the platoon to shut down their engines so that they can listen for advancing enemy.

If during the engagement the enemy forces reach the break point, the platoon leader will probably request permission to displace to a subsequent battle position and will request final protected fires. The platoon leader can make both requests on SIMNET. The platoon leader will also be able to receive the response to his request to displace.

Platoon Sergeant

During the execution of a defensive mission, the platoon sergeant will coordinate movement to alternate firing positions and may be required to coordinate movement to supplementary and subsequent battle positions. The platoon sergeant will be able to perform all three coordination tasks on SIMNET.

Tank Commander

During the defensive engagement, the tank commander will lay the main gun in the assigned sector, or if a target has been detected, on the target. On an actual M1 tank, the tank commander can lay the gun while viewing the battlefield from the open hatch, from the unity periscopes, or from the GPSE. Because the SIMNET M1 does not simulate the open hatch mode, he cannot lay the gun from the open hatch. Although the tank commander can use the unity vision blocks to view the battlefield on the SIMNET M1, the gun tube cannot be seen from these blocks. Because the normal cues that enable the tank commander to

determine the position of the gun tube are not present in the SIMNET M1, the turret-to-hull reference display has been added to SIMNET. The tank commander can use this display to determine the position of the gun and to help him lay the gun in the assigned sector or on the target. This method, however, would be unique to SIMNET and may provide little, if any, training value for the performance of the task on an actual M1. Performing the task using the GPSE comes closest to simulating the performance of the task on the an actual tank. However, the tank commander may not be able to identify the assigned sector in the GPSE because of the scarcity of recognizable terrain features.

During the execution of the defensive mission, the tank commander scans for targets. There are several important differences in the way the tank commander would perform this task on the SIMNET M1 and on an actual M1 tank. The tank commander is likely to use the TIS at least some of the time on an actual tank, but he cannot use this system on SIMNET because it is not simulated. The tank commander is also likely to scan for targets from the open hatch on an actual tank, but he cannot use the open hatch on SIMNET because it is not simulated. Although the unity periscopes are simulated on SIMNET, the horizontal field of view provided by the tank commander's vision blocks is only 64°. Thus, the tank commander must rotate the cupola to see beyond this field of view. The cupola can only be rotated through 300°, however, essentially creating an area to the rear of the tank that the tank commander cannot scan using the vision blocks. Although the enemy is unlikely to attack from the rear on an actual battlefield, experienced SIMNET players may take advantage of this limitation in the viewing system to attack from a direction in which they cannot be seen.

The maximum distance that can be viewed on SIMNET is 3,500 meters. Although a tank commander may not always be able to scan this far on an actual battlefield because he may not have line of sight, there are likely to be situations where he can scan even further than this distance. These situations obviously cannot be simulated on SIMNET. If a tank commander detects a possible target on the battlefield, he must determine whether it is a friendly or threat vehicle. This task is simple for the tank commander on SIMNET because friendly and threat vehicles are displayed in different colors.

When the tank commander detects a target, he submits a contact report to the platoon leader, a communications task that the tank commander can perform this task on SIMNET. Once the target is detected, the tank commander must react to the platoon fire command. Because the machineguns are not simulated on SIMNET, the use of machineguns will probably not be included in the platoon fire command. On the other hand, if the use of machineguns is included in the platoon fire command, the tank commander must issue a crew fire command that cannot be executed, substitute the main gun in the platoon fire command, or ask the platoon leader for clarification. Thus, the consequences for the tank commander are either the failure to practice the execution of fire commands that include the machineguns or else to respond to the fire command in ways that are inappropriate for the actual tank.

The tank commander reports to the platoon leader when his crew is ready to engage and reports all actions. Again, these communications tasks can be performed on SIMNET.

Crews

Upon receiving the appropriate order, the driver starts his vehicle and the crew moves the tank to a turret-down position. The crew may be unable to find the position that it selected earlier because positions cannot be marked. Moreover, it may be unable to find any turret-down position because there are few locations that are suitable for a turret-down position on the SIMNET terrain. When a position is selected, the crew will be unable to confirm its adequacy because the GAS is not simulated. Once the tank is in a position, the crew is to scan for targets. The performance of this task by the tank commander was described above. The gunner would normally scan for targets using his primary sight. Because the sight is simulated on SIMNET, he can use it to scan for targets. However, because the TIS is not simulated, the gunner is restricted to the daylight channel. The loader would normally scan for targets from the open hatch or using his periscope. Because the open hatch mode is not simulated on SIMNET, the load must scan for targets using the unity vision block.

When the enemy has been detected, the crew will be ordered to move into a hull-defilade position and to engage the enemy. The description in the previous paragraph of movement into a turret-defilade position pertains to movement into a hull-defilade position as well. Once the tank is in position, the crew engages the enemy. A detailed description of tank gunnery on SIMNET was contained in a report by Hoffman and Morrison (1988). In brief, neither machineguns nor degraded mode gunnery are simulated on SIMNET. In addition, the TIS is not represented, and the array of targets is limited.

During the engagement, the crew will move to an alternate firing position. Because the route cannot be marked, the crew may be required to take a different route to the position. However, because the positions cannot be marked and because there are few distinguishing terrain features, the crew may be unable to locate the original position. Moreover, because there are few locations in the SIMNET world that are suitable for hull-defilade positions, the crew may be unable to find an adequate firing position. After engaging the enemy from the alternate position, the crew may return to the original primary position, or it may move to the hide position. It is also possible that the crew will move to a supplementary position or to a subsequent battle position. The previous descriptions of movement into the primary and alternate firing positions pertain to these other positions as well. At the end of the engagement, the crew will move back into a turret-down position and will conduct consolidate and reorganization exercises.

Hasty Occupation of a Battle Position

Platoon Leader

Upon receiving a FRAGO from the team leader, the platoon leader prepares a FRAGO and issues it to the platoon. The platoon leader then leads the platoon toward the rear of the flanks of the assigned battle position. Because the open hatch mode is not simulated on SIMNET, the platoon leader cannot issue hand-and-arm signals and must lead the platoon using the radio. In addition, the lack of an open hatch mode causes the platoon leader to use the unity vision blocks to observe the other tanks in the platoon. As a result of having to view the platoon from the vision blocks, the platoon leader may be unable to adequately observe the other tanks in the formation.

On the other hand, the lack of obstacles to movement, the relatively smooth terrain, and the general lack of vegetation facilitate platoon movement and reduce the need for extensive platoon leader control.

As the platoon approaches the battle position, the platoon leader must identify the limits of the battle position, possible locations for primary firing positions, and covered and concealed routes in and out of the battle position. Although the platoon leader must conduct this reconnaissance from his tank, he must use the unity vision blocks because the open hatch mode is not simulated. To locate the battle position and its limits, the platoon leader must first orient his map. The platoon leader may be unable to use map-terrain association for this purpose because of the lack of identifiable terrain features. He may therefore have to rely on the grid azimuth indicator, a device that is not present in an actual M1 tank. Because of the scarcity of vegetation and terrain features, the platoon leader will probably be unable to locate covered and concealed routes between the battle position and the subsequent battle positions.

Next, the platoon leader will direct his platoon to conduct a hasty occupation of the battle position. From this point on, the activities that are performed by the platoon leader and the other members of the platoon are virtually identical to those performed during the deliberate occupation of a battle position.

Chapter 7. Summary and Conclusions

The purpose of this research was to identify the capabilities and limitations of SIMNET for training the tactical skills required by tank platoons to conduct combat operations. A procedure developed by Morrison and Hoffman (1988) was used to identify these capabilities and limitations. The procedure was initially designed to identify the capabilities and limitations of gunnery devices as media for training crew gunnery skills. A more desirable approach would have been to determine if the skills learned on the simulator or gunnery devices transfer to the actual equipment. Because of the problems involved in assessing crew gunnery skills and platoon tactics on gunnery ranges or in the field, transfer research involving gunnery and tactics is difficult to conduct. The approach developed by Morrison and Hoffman was intended as an alternative.

As a prerequisite for implementing the approach developed by Morrison and Hoffman (1988), it is necessary to identify the activities that are normally performed during combat and the steps that are involved in the performance of these activities. To identify the activities performed during gunnery, Morrison and Hoffman closely examined crew gunnery procedures. They identified 11 different gunnery activities which they then examined in greater depth to identify the steps involved in each activity. If the activity could be performed, they determined (a) if all of the elements of the activity could be performed, (b) if the stimuli and responses on the device were the same as those on the actual equipment, and (c) if performance on the device would correlate with performance on the actual equipment. Their observations were recorded on a check list along with explanations for any observations recorded as "NO." Morrison and Hoffman then examined these observations and explanations in order to determine if a device could be used to train soldiers to perform each of the activities involved in crew gunnery.

The first step in applying the method to an examination of SIMNET was to identify the activities performed by tank platoons during armor operations. These activities were identified by analyzing doctrinal descriptions of platoon drills, offensive missions, defensive missions, and special operations. The analysis of the drills focused on the actions performed by each of the four tanks in the platoon. The analyses of missions and special operations focused on the actions performed by the platoon leader, the platoon sergeant, the tank commanders, and the crews.

Once these activities were identified, members of the research staff attempted to perform a representative sample of them on SIMNET. In particular, they attempted to perform all of the drills and many of the actions performed during offensive and defensive operations. Their experiences on SIMNET were then used as the basis for completing the check list. Each activity that was identified during the analysis of armor tactical operations was rated on the five categories contained on the check list. If an activity was not actually performed on SIMNET, the ratings were based on the staff's experience in performing similar activities and on supplemental information from SIMNET documentation. An explanation was presented for each activity receiving a "NO" rating on any of the five response categories.

Identification of SIMNET Capabilities and Limitations

Capabilities

Few activities were identified that could be performed on SIMNET as they would be performed during tactical operations in the field. The activities that could be performed with the highest level of fidelity were either (a) tasks that did not actually involve the use of the simulator, and (b) communication tasks involving the intercom or radio. Examples of tasks that did not involve the use of the simulator include analyzing an OPORD, formulating a plan, conducting a map reconnaissance, preparing an OPORD, and briefing a crew. Examples of the communications tasks that could be adequately performed on SIMNET include issuing a warning order, issuing a platoon OPORD, receiving an OPORD, issuing a FRAGO, and issuing various reports.

Limitations

At the other extreme were tasks that could not be performed at all because the capability to perform these tasks was not incorporated into SIMNET. Included in this category were all tasks requiring open hatches (e.g., issuing hand-and-arm signals, closing hatches when receiving indirect fire), all tasks requiring dismounting (e.g., establishing an observation post), all tasks requiring manipulation of the outside of the tank (e.g., camouflaging the tank, executing actions at a halt), all tasks requiring equipment that was not simulated (e.g., conducting engagements with machineguns, establishing a hot loop, employing chemical alarms), all tasks requiring modification of terrain (e.g., clearing fields of fire; improving defensive positions; marking primary, alternate, and supplementary firing positions), and tasks that required terrain representations that either did not exist at all or were too rare to be useful (e.g., moving into a hull-defilade position, moving into a turret-defilade position, moving on a covered and concealed route).

Partial Capabilities

The majority of the tactical activities fell in between the two extremes because they could be performed to some degree on SIMNET, but they could not be performed as they would in the field. Examples include scanning for targets, conducting a reconnaissance, moving in a platoon formation, selecting firing positions, coordinating with adjacent tanks, and performing resupply. Most of the analyses described in Chapters 3, 4, and 5 focused on these tasks that could be partially performed on SIMNET.

The Training Developer's Dilemma

The fact that the majority of the activities performed during tactical operations fall between the two extremes of fidelity creates a dilemma for the training developer. To conduct an adequate training program, the training developer must know which activities can be performed on SIMNET and which cannot. Identifying the activities that cannot be performed at all is relatively simple. The dilemma for the training developer occurs because so few of the tasks that can be performed on SIMNET can be simulated with a high level of fidelity. Given the knowledge that the cues or the responses (or

both) will be different from those occurring on the actual battlefield, the training developer must decide whether the training will be beneficial or not.

Negative transfer

The worst possible outcome of training is negative transfer. This would occur when training on a simulator causes a deterioration rather than an improvement in performance on the actual equipment. The training developer obviously must try to avoid training any task on a simulator that would interfere with performance on the tank or in the field. Although the possibility exists that training on SIMNET may result in negative transfer, there is no way to determine with certainty that this would occur based on the analysis that was performed in this research. For example, because hand-and-arm signals cannot be given on SIMNET, communications must be performed by radio. The possibility exists that reliance on the radio during training on SIMNET would result in greater reliance on the radio in combat. Similarly, crews cannot use cover and concealment on SIMNET because there are few positions offering adequate cover and concealment. The possibility exists that ignoring cover and concealment during training on SIMNET would result in overlooking cover and concealment in combat.

Positive transfer

It must be emphasized again that it cannot be determined from the analysis that negative transfer will occur--only that the possibility exists for negative transfer. On the other hand, even if it is assumed or it can be shown that negative transfer does not occur, this fact alone would not justify the use of SIMNET as a medium for training tactical skills. Given that a majority of the tasks are not performed on SIMNET exactly as they would be performed in the field, the training developer must be concerned with the likelihood that there will be positive transfer. That is, the training developer must select for training on SIMNET those tasks whose performance in the field is likely to be improved as a result of this training. Unfortunately, the tasks whose performance would benefit by training on SIMNET cannot be determined with certainty from the present analysis.

The difficulties involved in identifying the likelihood of positive transfer can be illustrated by examining the reconnaissance of the battle position conducted by the platoon leader. On an actual battlefield, the platoon leader would probably not move to the battle position in his tank as he must on SIMNET. He would probably establish an observation post, but cannot on SIMNET because the troops cannot dismount. He would probably dismount when conducting the reconnaissance or at least conduct it from the open hatch, but he can do neither on SIMNET. The terrain that the platoon leader examines would be seen in much more detail on the actual battlefield than it would on SIMNET. Much more vegetation and terrain details would be present on the actual battlefield than on SIMNET. The platoon leader would be able to mark the sector boundaries and the firing positions, although he cannot mark these locations on SIMNET. He would have available a map with much more detail than the map given to him on SIMNET. An important question that cannot be readily answered, however, is whether the platoon leader would benefit from the training he receives on SIMNET despite the differences between the way the reconnaissance is performed on SIMNET and the way it is performed on the actual battlefield. Even if this particular question were

answered, the information would not be sufficient. The same question would have to be answered for all of the tasks that are not performed on SIMNET as they are on the battlefield.

Higher Order Tasks

Although this analysis of the capabilities and limitations of SIMNET focused on objectives derived from an analysis of armor operations, there are higher order objectives that must be considered when examining any battle simulation. These are the less tangible aspects of battlefield performance involving teamwork and coordination. It is a common axiom that success on the battlefield is determined, at least in part, by how well soldiers fight as a unit. Because SIMNET allows different units to coordinate during a simulated battle, it would appear that SIMNET could serve as an effective medium for training these skills. Tank crews could practice coordinating with other crews, platoons could practice coordinating with other platoons, and armor units could practice coordinating with support units or with units from the other combat arms. To identify SIMNET's capabilities and limitations to accomplish these training objectives, however, the specific training objectives must first be identified. Only then can SIMNET be examined in sufficient detail to determine if higher order skills can be trained on it. However, even if it can be shown that higher order skills can be trained on SIMNET, an effective training program would require evidence that negative transfer does not occur on the tasks that are not the primary focus of the training.

Generality of Results

The application of the method used to identify the capabilities and limitations of SIMNET requires the identification of the activities that are performed during combat operations. Although the activities were consistent with the information contained in the coordinating draft of ARTEP 17-237-10-MTP (U.S. Army Armor School, (1987), lists of armor tasks and descriptions of armor operations are revised periodically. Consequently, other efforts to identify activities performed during armor operations are apt to result in a somewhat different list of activities. Assuming that it is possible to derive other lists of armor tasks, it is necessary to ask if the results of the present analysis extend beyond the specific list of tasks used for the present research.

Given the nature of the results, it is extremely unlikely that the research conclusions would be significantly altered by changes in the list of activities used for the analysis. Any differences between the activities that were the focus of the present analysis and activities that could be derived from other examinations of doctrine are more likely to reflect differences in wording than differences in function. Moreover, even if significant differences were found, the sample of activities used in the present research was sufficiently large that the generality of the findings should not be suspect. Most tasks examined in the present research effort were found to contain some elements that were adequately simulated on SIMNET and some elements that were not. The same findings would probably be obtained with any list of armor tasks that is based on current doctrine.

Mission Oriented Training

Because training on SIMNET will probably be conducted to supplement or replace training conducted in the field, it is important that training focus on the conduct of an operation or mission. Although the focus of the present research was on the separate activities that are performed during armor operations, it is unlikely that SIMNET will be used to train the performance of these activities as independent entities. To practice the performance of an operation, it is as important to practice the interrelationship between tasks or the transition from one task to another as it is to practice the performance of each of the tasks separately. The limitations present in SIMNET make this a difficult goal to accomplish. To practice the interrelationship between tasks requires that all of the separate tasks be performed. Unfortunately, given the number of tasks that cannot be performed at all on SIMNET and the number that can be performed only partially, few operations can be performed in their entirety. As a consequence, the training developer finds himself in another dilemma. He has the choice of trying to conduct an operation that contains a significant number of gaps or else training small clusters of tasks that can be properly sequenced without gaps. Because planning and communications are the activities that are most adequately simulated on SIMNET, it may difficult for the training developer to find clusters of tasks suitable for training. On the other hand, if the training developer overlooks the gaps when designing training, students may learn less than what was intended, or in extreme cases, may experience negative transfer.

Another alternative would be to create a mission scenario that would involve only those activities that are adequately simulated on SIMNET. Thus, a scenario would be prepared in which covered and concealed routes are not needed, there would be no requirement for machineguns, no hand-and-arm signals would be given, and so forth. Although it may be possible to create such a scenario, any missions derived in this manner will not be representative of the types of armor missions tank platoons would be likely to perform in combat. In essence, if this training strategy were adopted, training would be dictated by the capabilities of the battlefield simulator. This is just the opposite of the ideal situation in which the design of the simulator would be dictated by training requirements.

Conclusions

The primary purpose of this research was to identify the capabilities and limitations of SIMNET. This was accomplished by comparing the performance of tactical activities on SIMNET with their performance in the field. Although the capabilities and limitations of SIMNET were identified using this approach, the consequences for training are not always obvious. It is probably safe to assume that tasks cannot be trained on SIMNET if they cannot be performed on SIMNET. It can probably also be assumed, although with less certainty, that tasks can be trained on SIMNET if they are performed on SIMNET exactly as they are performed in the field using actual equipment. Unfortunately, most activities performed during platoon operations fall between these two extremes. That is, they can be performed on SIMNET, but not at high levels of fidelity.

Given this situation, the training developer is faced with a serious problem relating to training on SIMNET--how to train the tasks that are simulated to lower levels of fidelity while avoiding negative transfer. High levels of fidelity are not always needed nor even desirable for learning to occur. Unfortunately, the training developer does not know the level of fidelity necessary to learn each activity nor the conditions under which negative transfer will occur. Given the number of activities that can be performed at intermediate levels of fidelity, there is a risk that students will not actually learn many of the activities included in training because the level of fidelity is too low. More seriously, given the differences in how many activities are performed on SIMNET and how they are performed in the field, there is a risk that training on SIMNET will impede rather than enhance learning on some activities.

Because of the possibility that practice on SIMNET may not result in improved performance on many activities, and because of the more serious possibility that practice on SIMNET may promote negative transfer on some activities, the following recommendations are made:

1. Trainers who conduct unit training on SIMNET should make certain that soldiers are aware of any differences between the performance of activities on SIMNET and their performance in the field.

2. Trainers should alternate between training on SIMNET and training in the field. Morrison and Holding (1990) recommend that trainers alternate between devices or between devices and real world equipment (i.e., the M1 tank) as a way of avoiding misunderstandings stemming from simulator deficiencies. They also suggest that training on real world equipment establishes a goal for training conducted on a simulator.

3. Unit trainers should be careful to monitor the performance of soldiers who have been trained on SIMNET. Until more information is available on the effects of SIMNET training, trainers should try to determine whether or not the soldiers actually acquired the skills they were supposed to have learned on SIMNET. In addition, they should watch for evidence of negative transfer.

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Appendix A

An Analysis of the Simulation of Tank Platoon Tactical Formations and Drills on SIMNET

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

MOVEMENT FORMATIONS (Wedge, Line, Column, Vee, Echelon)	If NO, Provide Comment					Comments
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	
PL: Identify appropriate movement formation for terrain and situation	YES	YES	NO	NO	NO	3/4 - Lack of terrain features permits platoon to execute formations at almost any location on the terrain data base. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 5 - Not observable, infer from signal/order for a particular formation
PL: Order Movement Formation:						
- Issue appropriate hand and arm signal	NO					1 - Device does not allow for hand and arm signals to be issued.
OR						
- Issue appropriate radio command	YES	YES	YES	YES	YES	
T2,3,4: Acknowledge Movement Formation signal/command:						
- Issue appropriate hand and arm signal	NO					1 - Device does not allow for hand and arm signals to be issued.
OR						
- Issue appropriate radio message	YES	YES	YES	YES	YES	
PL: Establish direction/axis of movement, speed, interval	YES	YES	NO	NO	YES	3 - Display lacks cues (e.g., shadows) used in real world to determine cardinal direction. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Estimating distance between objects is difficult. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed. 3 - Grid Azimuth Indicator, unique to device, can be used to determine cardinal direction or exact location. 4 - Expected transfer is nil, as a result of inadequate cues for speed and direction.
T2,3,4: Move to proper position relative to wingman	YES	YES	NO	YES	YES	3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation. 3 - vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

MOVEMENT FORMATIONS (Wedge, Line, Column, Vee, Echelon) (continued)		If NO, Provide Comment					
		(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform.	Comments
T2,3,4:	Disperse appropriate interval from wingman	YES	YES	NO	NO	YES	3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3/4 - Estimating distance between objects is difficult; could develop unsafe habit of lasing to tanks to determine interval. 3 - Judging speed of other vehicles is difficult. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues.
PLT:	Orient gun tubes to provide maximum security for designated formation of movement	YES	YES	NO	YES	YES	3 - Turret/Gun-to-Hull Reference System Display, used to identify turret/gun tube orientation, is unique to device. 3 - TC/gunner/loader can become easily disoriented when gun tube is not pointed over front of vehicle.
PLT:	Establish/Maintain all-around movement security	YES	NO	NO	YES	NO	2/3 - Thermal Imaging System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Of terrain features and vegetation provides vehicles with a virtually unobstructed view. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 5 - Not observable.
PLT:	Maintain formation, speed, and interval until directed otherwise	YES	YES	NO	NO	YES	3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3/4 - Estimating distance between objects is difficult; could develop unsafe habit of lasing to tanks to determine interval. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

COIL FORMATION		If NO, Provide Comment					
		(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
PL:	Identify terrain suitable for Coil that provides cover/concealment	YES	YES	NO	NO	NO	3 - Suitable cover/concealment is sparse, difficult to locate. 3/4 - Lack of terrain features permits platoon to execute formations at almost any location on the terrain data base. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 5 - Not observable, infer from signal/order for Coil formation.
PL:	Order Coil Formation:						
	- Issue Coil hand and arm signal	NO					1 - Device does not allow for hand and arm signals to be issued.
	OR						
	- Issue Coil radio command	YES	YES	YES	YES	YES	
T2,3,4:	Acknowledge Coil Formation signal/order:						
	- Issue appropriate hand and arm signal	NO					1 - Device does not allow for hand and arm signals to be issued.
	OR						
	- Issue appropriate radio message	YES	YES	YES	YES	YES	
T1:	Halt in position along axis of movement (12 o'clock)	YES	YES	YES	YES	YES	
T2,3,4:	Move to proper position relative to T1 (3, 6, or 9 o'clock) and halt	YES	YES	NO	YES	YES	3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features.
PLT:	Occupy position in immediate area that maximizes cover, concealment, fields of fire	YES	NO	NO	NO	YES	2/3 - Crew cannot dismount to locate, adjust, verify cover/concealment. 3 - Suitable cover/concealment is sparse, difficult to locate and occupy. 3 - Difficult to determine if adequate cover/concealment has been attained. 4 - Expected transfer is nil; inadequate cover/concealment.
PLT:	Orient gun tubes to provide 360° security	YES	YES	NO	YES	YES	3 - Turret/Gun-to-Hull Reference System Display, used to identify turret/gun tube orientation, is unique to device. 3 - TC/gunner/loader can become easily disoriented when gun tube is not pointed over front of vehicle.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

COIL FORMATION (continued)	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
						2/3 - Cannot dismount to establish/operate OP/LP. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed view. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control. 3 - Thermal Imaging System not represented. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters.
PLT: Establish/Maintain local security	YES	NO	NO	YES	NO	5 - Not observable
						3 - Method of refueling vehicles is unique to device. 3 - Method of ammunition transfer/resupply is unique to device. 2/3 - Sensory cues used to diagnose faults are limited. 2/3 - Cannot perform PMCS on Combat Vehicle Simulator. 2/3 - Limited number of faults that can be diagnosed through SIMNET troubleshooting index. 2/3 - For some operational faults (i.e., thrown/broken tracks, vision blocks, and radio/intercoms) the crew must wait a specified period of time (the average repair time) before continuing.
PLT: Perform actions at a halt	YES	NO	NO	NO	YES	4 - Refueling, ammunition transfer, and maintenance procedures too dissimilar from real world, expected transfer is ni'.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

HERRINGBONE FORMATION	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
PL: Identify situation requiring and terrain suitable for Herringbone Formation	YES	YES	NO	NO	NO	3 - Suitable cover/concealment is sparse, difficult to locate. 3/4 - Lack of terrain features permits platoon to execute formations at almost any location on the terrain data base. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 5 - Not observable, infer from signal/order for Herringbone formation.
PL: Order Herringbone Formation:						
- Issue Herringbone hand and arm signal	NO					1 - Device does not allow for hand and arm signals to be issued.
OR						
- Issue Herringbone radio command	YES	YES	YES	YES	YES	
T2,3,4: Acknowledge Herringbone Formation signal/order:						
- Issue appropriate hand and arm signal	NO					1 - Device does not allow for hand and arm signals to be issued.
OR						
- Issue appropriate radio message	YES	YES	YES	YES	YES	
PLT: Move to right/left and oblique from route of movement at approximately 30-45° angle	YES	YES	NO	YES	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues.
PLT: Occupy covered/concealed positions	YES	NO	NO	NO	YES	2/3 - Crew cannot dismount to locate, adjust, verify cover/concealment. 3 - Suitable cover/concealment is sparse, difficult to locate and occupy. 3 - Difficult to determine if adequate cover/concealment has been attained. 4 - Expected transfer is nil; inadequate cover/concealment.
PLT: Maintain proper interval of dispersion from wingman	YES	YES	NO	NO	YES	3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3/4 - Estimating distance between objects is difficult; could develop unsafe habit of lasing to tanks to determine interval.
PLT: Orient gun tubes to provide 360° security	YES	YES	NO	YES	YES	3 - Turret/Gun-to-Hull Reference System Display, used to identify turret/gun tube orientation, is unique to device. 3 - TC/gunner/loader can become easily disoriented when gun tube is not pointed over front of vehicle.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

HERRINGBONE FORMATION (continued)	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
						2/3 - Cannot dismount to establish/operate OP/LP. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed view. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control. 3 - Thermal Imaging System not represented. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters.
PLT: Establish/Maintain local security	YES	NO	NO	YES	NO	5 - Not observable
						3 - Method of refueling vehicles is unique to device. 3 - Method of ammunition transfer/resupply is unique to device. 2/3 - Sensory cues used to diagnose faults are limited. 2/3 - Cannot perform PMCS on Combat Vehicle Simulator. 2/3 - Limited number of faults that can be diagnosed through SIMNET troubleshooting index. 2/3 - For some operational faults (i.e., thrown/broken tracks, vision blocks, and radio/intercoms) the crew must wait a specified period of time (the average repair time) before continuing.
PLT: Perform actions at a halt	YES	NO	NO	NO	YES	4 - Refueling, ammunition transfer, and maintenance procedures too dissimilar from real world, expected transfer is nil.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

TRAVELING		If NO, Provide Comment					
		(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
PL:	Identify terrain/situation allowing for movement by traveling	YES	YES	NO	YES	NO	3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 5 - Not observable, infer from signal/order to move in traveling.
PL:	Select most appropriate formation of movement	YES	YES	NO	NO	NO	3/4 - Lack of terrain features permits platoon to execute formations at almost any location on the terrain data base. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 5 - Not observable, infer from signal/order for a particular formation.
PL:	Order platoon to move by traveling in formation:						
	- Issue appropriate hand and arm signals for traveling and formation	NO					1 - Device does not allow for hand and arm signals to be issued.
	OR						
	- Issue appropriate radio command for traveling and formation	YES	YES	YES	YES	YES	
T2,3,4:	Acknowledge PL's signal/command:						
	- Issue appropriate hand and arm signal	NO					1 - Device does not allow for hand and arm signals to be issued .
	OR						
	- Issue appropriate radio message	YES	YES	YES	YES	YES	
PLT:	Perform designated formation drill	YES *					1 - See performance element ratings listed under Movement Formations.
PL:	Control platoon movement/formation	YES	NO	NO	NO	YES	2/3 - Cannot issue hand and arm signals, to direct tanks in formation. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 4 - Inability to use hand and arm signals could lead to overreliance 4 - On radio communication.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

TRAVELING (continued)		If NO, Provide Comment					
		(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
PLT:	Maintain position in formation, interval, and speed using wingman orientation; until directed otherwise	YES	YES	NO	NO	YES	3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3/4 - Estimating distance between objects is difficult; could develop unsafe habit of lasing to tanks to determine interval. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed.
PLT:	Establish/Maintain all-around movement security	YES	NO	NO	YES	NO	2/3 - Thermal Imaging System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Of terrain features and vegetation provides vehicles with a virtually unobstructed view. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 5 - Not observable.
PLT:	Continue Traveling technique until directed otherwise						

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

TRAVELING OVERWATCH	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
PL: Identify terrain situation allowing for movement by traveling ove watch	YES	YES	NO	YES	NO	3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 5 - Not observable, infer from signal/order to move in traveling overwatch.
PL: Select most appropriate formation of movement	YES	YES	NO	NO	NO	3/4 - Lack of terrain features permits platoon to execute formations at almost any location on the terrain data base. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 5 - Not observable, infer from signal/order for a particular formation.
PL: Order platoon to move by traveling in formation:						
- Issue appropriate hand and arm signals for traveling and formation	NO					1 - Device does not allow for hand and arm signals to be issued.
OR						
- Issue appropriate radio command for traveling overwatch and formation	YES	YES	YES	YES	YES	
T2,3,4: Acknowledge PL's signal/command:						
- Issue appropriate hand and arm signal	NO					1 - Device does not allow for hand and arm signals to be issued.
OR						
- Issue appropriate radio message	YES	YES	YES	YES	YES	
Traveling Section: Move continuously following covered/concealed route	YES	YES	NO	NO	YES	3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Suitable cover/concealment is sparse, difficult to locate. 3 - Difficult to determine if adequate cover/concealment has been attained. 4 - Expected transfer is nil; inadequate cover/concealment.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

TRAVELING OVERWATCH (continued)	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Traveling Section: Maintain position in formation, interval, and speed using wingman orientation	YES	YES	NO	NO	YES	3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3/4 - Estimating distance between objects is difficult; could lead to unsafe habit of lasing to tanks to determine distance. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed.
PL: Control Traveling Section movement	YES	NO	NO	NO	YES	3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 2/3 - Cannot issue hand and arm signals to direct tanks in formation. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 4 - Inability to use hand and arm signals could lead to overreliance on radio communication.
Traveling Section: Orient gun tubes/sectors of fire to front/ flanks	YES	YES	NO	YES	YES	3 - Turret/Gun-to-Hull Reference System Display, used to identify turret/gun tube orientation, is unique to device. 3 - TC/gunner/loader can become easily disoriented when gun tube is not pointed over front of vehicle.
Overwatch Section: Move at variable speeds and distances behind Traveling Section using wingman orientation	YES	YES	NO	YES	YES	3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Estimating distance between objects is difficult. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

TRAVELING OVERWATCH (continued)	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Overwatch Section: Pause in hull down positions to provide stationary overwatch of Traveling Section, as necessary	YES	NO	NO	NO	YES	3 - Hide, turret-down, and hull down positions are scarce, difficult to identify due to terrain smoothing and lack of vegetation. 2/3 - Crew cannot dismount to locate, adjust, verify cover/concealment/ tank defilade. 3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down. 4 - Expected transfer is nil; inadequate cover/concealment.
Overwatch Section: Continuously observe Traveling Section's movement and terrain dominating that movement	YES	NO	NO	YES	NO	2/3 - Thermal Imaging System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Of terrain features and vegetation provides vehicles with a virtually unobstructed view. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 5 - Not observable.
PSG: Control Overwatch Section movement	YES	NO	NO	NO	YES	3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 2/3 - Cannot issue hand and arm signals to direct tanks in formation. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 4 - Inability to use hand and arm signals could lead to overreliance on radio communication.
PLT: Establish/Maintain all-around movement security	YES	NO	NO	YES	NO	2/3 - Thermal Imaging System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Of terrain features and vegetation provides vehicles with a virtually unobstructed view. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 5 - Not observable.
PLT: Continue Traveling Overwatch technique until directed otherwise						

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

BOUNDING OVERWATCH	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
PL: Identify terrain/situation allowing for movement by bounding overwatch	YES	YES	NO	YES	NO	3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 5 - Not observable, infer from signal/order to move in bounding overwatch.
PL: Identify:						
- Initial overwatch position	YES	YES	NO	NO	NO	3 - Hindered by lack of an open hatch mode, vision blocks restricted HFOV, and inability to utilize visual equipment. 3 - Orienting a map using a compass, requires the use of the Grid-Azimuth-Indicator, which is unique to the device. 3 - Orienting a map by map-terrain association is difficult since the SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain features or vegetation that can be used as reference points. 4 - Expected transfer is nil. Hide, turret-down, and hull down positions are scarce, difficult to identify on map or ground. 5 - Not observable.
- Subsequent overwatch position(s)	YES	YES	NO	NO	NO	3 - Hindered by lack of an open hatch mode, vision blocks restricted HFOV, and inability to utilize visual equipment. 3 - Orienting a map using a compass, requires the use of the Grid-Azimuth-Indicator, which is unique to the device. 3 - Orienting a map by map-terrain association is difficult since the SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain features or vegetation that can be used as reference points. 4 - Expected transfer is nil. Hide, turret-down, and hull down positions are scarce, difficult to identify on map or ground. 5 - Not observable.
- Covered/concealed routes to overwatch position(s)	YES	YES	NO	NO	NO	3 - Hindered by lack of an open hatch mode, vision blocks restricted HFOV, and inability to utilize visual equipment. 3 - Orienting a map using a compass, requires the use of the Grid-Azimuth-Indicator, which is unique to the device. 3 - Orienting a map by map-terrain association is difficult since the SIMNET terrain data base and co responding terrain maps contain few distinguishing terrain feature· or vegetation that can be used as reference points. 4 - Expected transfer is nil; inadequ ıte cover/concealment. 5 - Not observable.
- Bounding and overwatch sections	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

BOUNDING OVERWATCH (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
PL: Order platoon to move in Bounding Overwatch:						
- Issue appropriate hand and arm signals	NO					1 - Device does not allow for hand and arm signals to be issued.
OR						
- Issue appropriate radio command	YES	YES	YES	YES	YES	
T2,3,4: Acknowledge PL's hand and arm signal	NO					1 - Device does not allow for hand and arm signals to be issued.
OR						
Section Leader: Acknowledge PL's radio command	YES	YES	YES	YES	YES	
Overwatch Section: Occupy covered/concealed positions at initial overwatch position	YES	NO	NO	NO	YES	3 - Hide, turret-down, and hull down positions are scarce, difficult to identify and occupy due to terrain smoothing and lack of vegetation. 2/3 - Crew cannot dismount to locate, adjust, verify cover/concealment. 3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down. 4 - Expected transfer is nil; inadequate cover/concealment.
Overwatch Section: Orient gun tubes toward known/suspected OPFOR positions	YES	YES	NO	YES	YES	3 - Turret/Gun-to-Hull Reference System Display, used to identify turret/gun tube orientation, is unique to device. 3 - TC/gunner/loader can become easily disoriented when gun tube is not pointed over front of vehicle.
Overwatch Section Leader: Report to Bounding Section Leader when in position	YES	YES	YES	YES	YES	
Overwatch Section: Observe Bounding Section's movement and terrain dominating that movement	YES	NO	NO	YES	NO	2/3 - Thermal Imaging System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Of terrain features and vegetation provides vehicles with a virtually unobstructed view. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 5 - Not observable.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

BOUNDING OVERWATCH (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Bounding Section: Move to subsequent overwatch position along covered/concealed route utilizing wingman concept	YES	YES	NO	NO	YES	3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Suitable cover/concealment is sparse, difficult to locate. 3 - Difficult to determine if adequate cover/concealment has been attained. 4 - Expected transfer is nil, as a result of inadequate cover/ concealment.
Bounding Section: Orient gun tubes toward known/suspected OPFOR positions	YES	YES	NO	YES	YES	3 - Turret/Gun-to-Hull Reference System Display, used to identify turret/gun tube orientation, is unique to device. 3 - TC/gunner/loader can become easily disoriented when gun tube is not pointed over front of vehicle.
Bounding Section: Observe terrain dominating section's bound	YES	NO	NO	YES	NO	2/3 - Thermal Imaging System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Of terrain features and vegetation provides vehicles with a virtually unobstructed view. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 5 - Not observable.
Bounding Section: Occupy covered/concealed positions at subsequent overwatch position	YES	NO	NO	NO	YES	3 - Hide, turret-down, and hull down positions are scarce, difficult to identify due to terrain smoothing and lack of vegetation. 2/3 - Crew cannot dismount to locate, adjust, verify cover/concealment. 3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down. 4 - Expected transfer is nil; inadequate cover/concealment.
Bounding Section: Report to Overwatch Section Leader when in position	YES	YES	YES	YES	YES	
PL: Determine best method of bounding (alternate or successive bounds)	YES	YES	NO	NO	NO	3/4 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain, making it difficult to identify sources of cover/concealment for bounds and adequate overwatch positions. 5 - Not observable, infer from directions given for subsequent bounds.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

BOUNDING OVERWATCH
(continued)

	If NO, Provide Comment				
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
PLT: Repeat above performance elements using appropriate method of bounding until directed otherwise						

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

CHANGE OF FORMATION DRILL		If NO, Provide Comment					
		(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
PL:	Select most appropriate formation of movement	YES	YES	NO	NO	NO	3/4 - Lack of terrain features permits platoon to execute formations at almost any location on the terrain data base. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 5 - Not observable, infer from signal/order for a particular formation
PL:	Order platoon into new formation:						
	- Issue appropriate hand and arm signals	NO					1 - Device does not allow for hand and arm signals to be issued.
	OR						
	- Issue appropriate radio command	YES	YES	YES	YES	YES	
PLT:	Acknowledge PL's signal/command:						
	- Issue appropriate hand and arm signals	NO					1 - Device does not allow for hand and arm signals to be issued.
	OR						
	- Issue appropriate radio command	YES	YES	YES	YES	YES	
PLT:	Move to proper position relative to wingman	YES	YES	NO	YES	YES	3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features.
PLT:	Maintain proper interval or dispersion	YES	YES	NO	NO	YES	3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3/4 - Estimating distance between objects is difficult; could develop unsafe habit of lasing to tanks to determine interval. 3 - Judging speed of other vehicles is difficult. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues.
PLT:	Orient gun tubes to prevent masking by friendly elements during formation change	YES	YES	NO	YES	YES	3 - Turret/Gun-to-Hull Reference System Display, used to identify turret/gun tube orientation, is unique to device. 3 - TC/gunner/loader can become easily disoriented when gun tube is not pointed over front of vehicle.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

CHANGE OF FORMATION DRILL
(continued)

		If NO, Provide Comment					
		(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
PLT:	Maintain all-around movement security	YES	NO	NO	YES	NO	2/3 - Thermal Imaging System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Of terrain features and vegetation provides vehicles with a virtually unobstructed view. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 5 - Not observable.
PLT:	Maintain formation, speed, and interval until directed otherwise	YES	YES	NO	NO	YES	3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3/4 - Estimating distance between objects is difficult; could develop unsafe habit of lasing to tanks to determine interval. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

ACTION DRILL (Non-Contact)		If NO, Provide Comment					
		(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
PL:	Determine direction in which platoon needs to move	YES	YES	NO	YES	NO	3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 5 - Not observable, infer from signal/order to change direction.
PL:	Order Action Drill:						
	- Issue Action Drill hand and arm signals	NO					1 - Device does not allow for hand and arm signals to be issued.
OR	- Issue Action Drill radio command	YES	YES	YES	YES	YES	
PLT:	Change direction of travel as designated	YES	YES	NO	YES	YES	3 - Lack of terrain features and obstacles permits movement at almost any point on the terrain. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues.
PLT:	Move on line using wingman orientation	YES*					* - See performance element ratings listed under Movement Formations (Wedge, Line, Column, Vee, Echelon).
PLT:	Orient gun tubes toward front	YES	YES	NO	YES	YES	3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 3 - Turret/Gun-to-Hull Reference System Display, used to identify turret/gun tube orientation, is unique to device. 3 - TC/gunner/loader can become easily disoriented when gun tube is not pointed over front of vehicle.
PL:	Determine proper formation/drill to be ordered	YES	YES	NO	NO	NO	3/4 - Lack of terrain features permits platoon to execute formations at almost any location on the terrain data base. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 5 - Not observable, infer from signal/order for a particular formation/drill.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

ACTIONS ON CONTACT	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Tank in Contact: Return/Initiate fire to destroy or suppress OPFOR	YES*	NO	NO	NO	YES	* - For a more detailed assessment refer to the Evaluation of Gunnery Activities. 2/4 - Machine guns (preferred method of engagement for suppressive fire) not represented, could lead to overreliance on main gun engagements. 2/3 - Thermal Imaging System is not represented. 2/3 - Ballistics computer is not represented. 2/3 - Muzzle reference system is not represented. 2/3 - Stabilization drift controls are not represented. 2/3 - No degraded mode gunnery.
Tank in Contact: Employ on-board smoke (if needed)	NO					1 - Smoke system not represented.
Tank in Contact: Seek cover/concealment	YES	NO	NO	NO	YES	2/3 - Crew cannot dismount to locate, adjust, verify cover/concealment. 3 - Suitable cover/concealment is sparse, difficult to locate. 3 - Difficult to determine if adequate cover/concealment has been attained. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 4 - Expected transfer is nil; inadequate cover/concealment.
TC in Contact: Submit Contact Report	YES	YES	NO	YES	YES	3 - Difficult to identify vehicles by type. 3 - Device display lacks cues (e.g., shadows) for determining cardinal direction. 3 - Grid-Azimuth-Indicator, unique to device, can be used to determine cardinal direction/exact location.
PLT: Orient gun tubes toward direction designated in Contact Report	YES	YES	NO	YES	YES	3 - Turret/Gun-to-Hull Reference System Display, used to identify turret/gun tube orientation, is unique to device. 3 - TC/gunner/loader can become easily disoriented when gun tube is not pointed over front of vehicle.
PLT: Return/Initiate simultaneous, frontal fire to destroy or suppress OPFOR	YES*	NO	NO	NO	YES	* - For a more detailed assessment refer to the Evaluation of Gunnery Activities. 2/4 - Machine guns (preferred method of engagement for suppressive fire) not represented, could lead to overreliance on main gun engagements. 2/3 - Thermal Imaging System is not represented. 2/3 - Ballistics computer is not represented. 2/3 - Muzzle reference system is not represented. 2/3 - Stabilization drift controls are not represented. 2/3 - No degraded mode gunnery.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

ACTIONS ON CONTACT (continued)		If NO, provide Comment					
		(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
							3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed view. 3 - Color distinction makes OPFOR easily identifiable. 3 - Array of targets/target signatures represented is limited. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TCs and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 2/3 - Thermal Imaging System not represented. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters.
PLT:	Search for additional OPFOR targets	YES	NO	NO	YES	NO	5 - Not observable.
PLT:	Employ on-board smoke (if needed)	NO					1 - Smoke system not represented.
PL:	Direct Platoon Battle Drill (Action Drill, Contact Drill, Air Attack Drill)	YES*					* - See performance element ratings listed under Action Drill (Contact), Contact Drill, or Air Attack Drill.
PLT:	Develop situation using fire and movement to fix or destroy OPFOR	YES*					* - See performance element ratings listed under Movement to Contact, Fire and Movement.
							3 - Device display lacks cues (e.g., shadows) for determining cardinal direction. 3 - Grid Azimuth Indicator, unique to device, can be used to determine cardinal direction/exact location.
PL/PSG:	Submit complete SPOTREP to TL	YES	YES	NO	YES	YES	3 - Difficult to identify vehicles by type.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

CONTACT DRILL		If NO, Provide Comment					
		(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
PL:	Identify situation(s) requiring execution of Contact Drill	YES	YES	NO	YES	NO	3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 5 - Not observable, infer from signal/order for Contact Drill.
TC:	Order Contact Drill:						
	- Issue Contact Drill hand and arm signals	NO					1 - Device does not allow for hand and arm signals to be issued.
	OR - Issue Contact Drill radio command	YES	YES	YES	YES	YES	
PLT:	Maintain formation, direction/axis of movement, speed, interval	YES	YES	NO	NO	YES	3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3/4 - Estimating distance between objects is difficult; could develop unsafe habit of lasing to tanks to determine interval. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed. 3 - Grid Azimuth Indicator, unique to device, can be used to determine cardinal direction or exact location. 3 - Display lacks cues (e.g., shadows) used in real world to determine cardinal direction.
PLT:	Orient gun tubes toward direction designated	YES	YES	NO	YES	YES	3 - Turret/Gun-to-Hull Reference System Display, used to identify turret/gun tube orientation, is unique to device. 3 - TC/gunner/loader can become easily disoriented when gun tube is not pointed over front of vehicle.
PLT:	Search designated sector for OPFOR targets	YES	NO	NO	YES	NO	3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed view. 3 - Color distinction makes OPFOR easily identifiable. 3 - Array of targets/target signatures represented is limited. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TCs and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 2/3 - Thermal Imaging System not represented. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 5 - Not observable.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

CONTACT DRILL		If NO, Provide Comment					
		(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
PLT:	Adjust position within formation if masked by friendly elements	YES	YES	NO	YES	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues.
PLT:	Engage identified targets with simultaneous, frontal fire	YES*	NO	NO	NO	YES	* - For a more detailed assessment refer to the Evaluation of Gunnery Activities. 2/4 - Machine guns (preferred method of engagement for suppressive fire) not represented, could lead to overreliance on main gun engagements. 2/3 - Thermal Imaging System is not represented. 2/3 - Ballistics computer is not represented. 2/3 - Muzzle reference system is not represented. 2/3 - Stabilization drift controls are not represented. 2/3 - No degraded mode gunnery.
PL:	Submit SPOTREP to TL	YES	YES	NO	YES	YES	3 - Difficult to identify vehicles by type. 3 - Device display lacks cues (e.g., shadows) for determining cardinal direction. 3 - Grid-Azimuth-Indicator, unique to device, can be used to determine cardinal direction/exact location.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

ACTION DRILL (Contact)		If NO, Provide Comment (1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
PL:	Determine direction in which platoon needs to move	YES	YES	NO	YES	NO	3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 5 - Not observable, infer from signal/order to change direction.
PL:	Order Action Drill:						
	- Issue Action Drill hand and arm signals	NO					1 - Device does not allow for hand and arm signals to be issued
	OR - Issue Action Drill radio command	YES	YES	YES	YES	YES	
PLT:	Change direction of travel as designated	YES	YES	NO	YES	YES	3 - Lack of terrain features and obstacles permits movement at almost any point on the terrain. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues.
PLT:	Take evasive action to avoid OPFOR fire	YES	YES	NO	YES	YES	3 - Lack of terrain features and obstacles permits movement at almost any point on the terrain. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues.
PLT:	Orient gun tube toward front	YES	YES	NO	YES	YES	3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 3 - Turret/Gun-to-Hull Reference System Display, used to identify turret/gun tube orientation, is unique to device. 3 - TC/gunner/loader can become easily disoriented when gun tube is not pointed over front of vehicle.
PLT:	Search designated sector for target signatures	YES	NO	NO	YES	NO	3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed view. 3 - Color distinction makes OPFOR easily identifiable. 3 - Array of targets/target signatures represented is limited. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TCs and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 2/3 - Thermal Imaging System not represented. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 5 - Not observable.
PLT:	Move to cover/concealment	YES	NO	NO	NO	YES	2/3 - Crew cannot dismount to locate, adjust, verify cover/concealment. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Suitable cover/concealment is sparse, difficult to locate. 3 - Difficult to determine if adequate cover/concealment has been attained. 4 - Expected transfer is nil; inadequate cover/concealment.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

ACTION DRILL (Contact)		If NO, Provide Comment					
		(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
PLT:	Occupy hull down covered/concealed positions	YES	NO	NO	NO	YES	3 - Hide, turret-down, and hull down positions are scarce, difficult to identify and occupy due to terrain smoothing and lack of vegetation. 2/3 - Crew cannot dismount to locate, adjust, verify cover/concealment. 3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down. 4 - Expected transfer is nil; inadequate cover/concealment.
PLT:	Engage identified targets to destroy/suppress OPFOR	YES*	NO	NO	NO	YES	* - For a more detailed assessment refer to the Evaluation of Gunnery Activities. 2/4 - Machine guns (preferred method of engagement for suppressive fire) not represented, could lead to overreliance on main gun engagements. 2/3 - Thermal Imaging System is not represented. 2/3 - Ballistics computer is not represented. 2/3 - Muzzle reference system is not represented. 2/3 - Stabilization drift controls are not represented. 2/3 - No degraded mode gunnery.
PL:	Submit SPOTREP to TL	YES	YES	NO	YES	YES	3 - Difficult to identify vehicles by type. 3 - Device display lacks cues (e.g., shadows) for determining cardinal direction. 3 - Grid Azimuth Indicator, unique to device, can be used to determine cardinal direction/exact location.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

REACT TO AIR ATTACK DRILL	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Air Guard: Issue Contact Report to platoon (e.g., Contact, Air, Right)	YES	NO	NO	YES	YES	2 - Aircraft are not represented. 3 - Grid Azimuth Indicator, unique to device, can be used to determine cardinal direction/exact location. 3 - Device display lacks cues (e.g., shadows) for determining cardinal direction.
PL: Determine if platoon is in direct flight path of aircraft and if aircraft is attacking	NO					1 - Aircraft are not represented.
PL: Orders Air Attack Drill (if aircraft is attacking) (e.g., Air Attack, Left):						
- Issues Air Attack Drill hand and arm signals	NO					1 - Device does not allow for hand and arm signals to be issued.
OR - Issues Air Attack Drill radio command	YES	NO	NO	NO	YES	2/3 - Aircraft are not represented;cannot determine direction of attack. 4 - Expected transfer is nil.
PLT: Moves to cover/concealment (if available)	YES	NO	NO	NO	YES	2/3 - Crew cannot dismount to locate, adjust, verify cover/concealment. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Suitable cover/concealment is sparse, difficult to locate. 3 - Difficult to determine if adequate cover/concealment has been attained. 4 - Expected transfer is nil; inadequate cover/concealment.
OR Halts in place (if cover/concealment not available)	YES	YES	YES	YES	YES	
PLT: Disperse/Maintain at least 100 meter interval from rest of platoon	YES	YES	NO	YES	YES	3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Estimating distance between objects is difficult. 3 - Judging speed of other vehicles is difficult. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues.
Exposed Tanks: Move at 45° angle toward flight path of attacker	NO					1 - Aircraft/flight paths are not represented.
PLT: Engage attacking aircraft with appropriate weapons:						
Fixed wing aircraft - PL engage aircraft with machine gun, TC/LDR engage aircraft adjusting on PL's tracer	NO					1 - Machine guns are not represented. 1 - Aircraft are not represented.
OR Hovering aircraft - TC/GNR engage aircraft with main gun	NO					1 - Aircraft are not represented.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

REACT TO AIR ATTACK DRILL		If NO, Provide Comment					
		(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
PLT:	Search for following aircraft	YES	NO	NO	NO	NO	2/3 - Ability to conduct 360° air search is limited by vision blocks reduced HFOV and lack of open hatch mode. 4 - After learning that aircraft are not represented, crews may develop bad habit of not conducting air search. 5 - Not observable.
PL:	Submit SPOTREP to TL	YES	NO	NO	NO	YES	2/3 - Aircraft are not represented. 3 - Device display lacks cues (e.g., shadows) for determining cardinal direction. 3 - Grid Azimuth Indicator, unique to device, can be used to determine cardinal direction/exact location. 4 - Expected transfer is nil, situation is too contrived.
PL:	Wait at least one minute after aircraft passes and order platoon to resume movement	YES	NO	NO	YES	YES	2/3 - Aircraft are not represented. 2/3 - Device does not allow for hand and arm signals to be issued.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

Device Evaluated: SIMNET

REACT TO INDIRECT FIRE DRILL		If NO, provide Comment					
		(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Perform Observe?	Comments
PLT:	Close hatches and vision blocks	NO					1 - Hatches not represented, crew members enter through doors on side of simulator. 1 - Vision blocks cannot be closed.
PLT:	Put on and wear protective masks (if required)	YES	NO	NO	YES	NO	2/3 - Gas particulate filter system not represented on device. 5 - Can be scored by observing within CVS.
PLT:	(If moving) Maintain speed, direction/axis of movement, interval while taking evasive actions to avoid indirect fire	YES	YES	NO	YES	YES	3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Estimating distance between objects is difficult. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed. 3 - Grid Azimuth Indicator, unique to device, can be used to determine cardinal direction or exact location. 3 - Display lacks cues (e.g., shadows) used in real world to determine cardinal direction.
	OR						
	(If stationary and mission allows) Move to cover/ concealment outside of impact area	YES	NO	NO	NO	YES	2/3 - Crew cannot dismount to locate, adjust, verify cover/concealment. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Suitable cover/concealment is sparse, difficult to locate. 3 - Difficult to determine if adequate cover/concealment has been attained. 4 - Expected transfer is nil; inadequate cover/concealment.
	OR						
	(If stationary and mission does not allow movement) Move to turret down positions	YES	NO	NO	YES	YES	3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 2/3 - Crew cannot dismount to locate, adjust, verify cover/concealment.
PL:	Submit SPOTREP to TL	YES	YES	NO	YES	YES	3 - Difficult to determine type of burst (toxic agent) or crater dimension. 3 - Device display lacks cues (e.g., shadows) for determining cardinal direction. 3 - Grid Azimuth Indicator, unique to device, can be used to determine cardinal direction/exact location.
PLT:	Open hatches/ballistic doors when out of impact area or clear of shelling effects	NO					1 - Hatches not represented, crew members enter through doors on side of simulator. 1 - Vision blocks cannot be closed.

Evaluation of Tank Platoon Tactical Formation/Drill Performance Elements

REACT TO INDIRECT FIRE DRILL

Device Evaluated: SIMNET

		If NO, Provide Comment					
		(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Perform. Observe?	Comments
NBC Tank:	Perform NBC monitoring/chemical detection (as required)	NO					1 - NBC monitoring/chemical detection cannot be performed within the context of the simulation.
NBC Tank:	Report monitoring/detection results to PL (as required)	NO					1 - NBC monitoring/chemical detection cannot be performed within the context of the simulation.
PL:	Report results of monitoring/detection to TL (as required)	NO					1 - NBC monitoring/chemical detection cannot be performed within the context of the simulation.
PL:	Submit SHELREP to TL	YES	NO	NO	YES	YES	2/3 - Difficult to determine type of burst (toxic agent) or crater dimension. 3 - Device display lacks cues (e.g., shadows) for determining cardinal direction. 3 - Grid Azimuth Indicator, unique to device, can be used to determine cardinal direction/exact location.
PLT:	Wait for ALL CLEAR order from TL	YES	YES	YES	YES	YES	
PL:	Initiate unmasking procedures after receiving ALL CLEAR from TL	YES	NO	NO	NO	NO	2/3 - No open hatch mode. 2/3 - NBC monitoring/chemical detection cannot be performed within the context of the simulation. 4 - Expected transfer is nil, procedures required to perform task are too dissimilar from how it is performed in real world. 5 - Not observable.

Appendix B

An Analysis of the Simulation of Tank Platoon Offensive Operations on SIMNET

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)

A. MISSION PREPARATION

Platoon Leader	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
	If NO, Provide Comment					
Receive/Analyze Company/Team OPORD	YES	YES	YES	YES	NO	5 - Analysis of OPORD is not observable.
Issue platoon warning order	YES	YES	YES	YES	YES	
Formulate tentative plan for platoon's mission/ Backwards plan time	YES	YES	YES	YES	NO	5 - Not observable.
Post overlay/graphics for mission	YES	YES	NO	YES	YES	3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain, maps lack detail present in terrain maps of real world.
						3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain, maps lack detail present in terrain maps of real world.
Conduct map reconnaissance:	YES	YES	NO	YES	NO	5 - Not observable, can be measured by knowledge test.
- Identify all graphic control measures	YES	YES	YES	YES	NO	5 - Not observable, can be measured by knowledge test.
- Identify routes providing cover/concealment	YES	YES	NO	NO	NO	3/4 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify terrain that provides adequate cover/ concealment; expected transfer is nil.
						5 - Not observable, can be measured by knowledge test.
- Identify fields of observation and fire	YES	YES	NO	NO	NO	3/4 - Almost all points on terrain allow for virtually unobstructed fields of observation.
						5 - Not observable, can be measured by knowledge test.
- Identify obstacles	YES	NO	NO	NO	NO	2/3/4 - SIMNET terrain data base and corresponding terrain maps contain few obstacles (buildings, rivers); reinforced obstacles and mines are not represented.
						5 - Not observable, can be measured by knowledge test.
- Identify location(s) that provide a vantage point from which physical recon may be conducted	YES	YES	NO	YES	NO	3 - Due to lack of terrain features almost all points on terrain allow for virtually unobstructed fields of observation.
						5 - Not observable, can be measured by knowledge test.
- Identify location(s) suitable for changing technique/formation of movement	YES	YES	NO	NO	NO	3/4 - Terrain generally permits execution of any formation at almost any point on the terrain. expected transfer is nil.
						5 - Not observable, can be measured by knowledge test.
Develop a plan for physical recon	YES	YES	YES	YES	NO	5 - Not observable, can be measured by knowledge test.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
A. MISSION PREPARATION
(continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com-ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader (continued)						
Conduct physical reconnaissance:	YES	NO	NO	NO	NO	2/3/4 - Must be conducted from within Combat Vehicle Simulator (CVS) and is therefore hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 2/3 - Orienting a map using a compass, requires the use of the Grid-Azimuth Indicator, which is unique to the device. 3 - Orienting a map by map-terrain association is difficult since the SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain reference points. 5 - Not observable.
- Move to vantage point using covered/concealed route	YES	YES	NO	NO	YES	3 - Cannot walk on terrain, movement to vantage point must be in CVS. 3 - Difficult to determine if adequate cover/concealment has been attained. 3/4 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. expected transfer is nil.
- Post security element to provide 360° security	NO					1 - Personnel cannot dismount or walk on terrain to establish security on surrounding terrain.
- Orient map to ground	YES	NO	NO	NO	NO	2/3 - Orienting a map using a compass, requires the use of the Grid-Azimuth Indicator, which is unique to the device. 3 - Orienting a map by map-terrain association is difficult since the SIMNET terrain data base and corresponding terrain maps contain a few distinguishing terrain reference points. 4 - TCs may learn to rely on Grid-Azimuth indicator, which is not present on real vehicle. too few distinguishing terrain reference points. 5 - Not observable.
- Identify sectors of operation	YES	YES	NO	NO	NO	3 - Difficult to identify points on a map on the ground by map-terrain association due to lack of terrain reference points. 3 - Method of determining exact location requires use of Grid-Azimuth-Indicator, unique to device. 4 - Expected transfer is nil, procedure is too dissimilar from real world. could lead to dependence on Grid-Azimuth-Indicator. 5 - Not observable.
- Determine adequacy/Make changes in tentative plan	YES	YES	NO	NO	NO	3/4 - Manner in which reconnaissance must be conducted on device (inability to dismount and walk terrain or to utilize visual equipment) results in collection of information that is generally insufficient to determine adequacy of plans. 5 - Not observable.
- Return to platoon using covered/concealed route	YES	YES	NO	NO	YES	3 - Difficult to determine if adequate cover/concealment has been attained 3 - Cannot dismount or walk on terrain, movement must be by CVS. 3/4 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. expected transfer is nil.
Review fire support plan for the mission	YES	YES	YES	YES	NO	5 - Not observable.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
A. MISSION PREPARATION
(continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader (continued)						
Prepare platoon OPORD (Optional) with PSG	YES	YES	YES	YES	NO	5 - Not observable, can be measured by knowledge test.
Issue platoon OPORD to TCs	YES	YES	YES	YES	YES	
Supervise platoon precombat inspections	YES	NO	NO	NO	YES	2/3/4 - Cannot inspect CVS, NBC equipment, or some communications equipment (CVC helmets, telephone); personnel may be inspected independent of simulation.
Platoon Sergeant						
Establish priorities/procedures for maintenance and resupply	YES	YES	NO	YES	NO	3 - Age of tank (break down probability), ammunition level, and fuel level are selected during initialization. 5 - Not observable.
Supervise platoon preparation	YES*	NO	NO	NO	YES	2/3 - Method of refueling vehicles is unique to device. 2/3 - Method of ammunition resupply is unique to device. 2/3 - Cannot perform PMCS on CVS. 2/3 - Majority of pre-fire ops cannot be performed. 4 - Procedures are performed in a manner too dissimilar from real world.
(Optional) Prepare platoon OPORD with TL	YES	YES	YES	YES	NO	5 - Not observable, can be measured by knowledge test.
Post overlay/graphics for mission	YES	YES	NO	YES	YES	3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain, maps lack detail present in terrain maps of real world.
Determine platoon status and apprise TL	YES	YES	YES	YES	YES	
Tank Commanders						
Receive warning order from PL	YES	YES	YES	YES	YES	
Receive platoon OPORD from PL	YES	YES	YES	YES	YES	
Brief crews on platoon mission	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
A. MISSION PREPARATION
(continued)

Crews

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Assume proper REDCON status, per platoon warning order:						
Establish/Maintain security IAW REDCON status	YES	NO	NO	NO	N	2/3/4 - Cannot establish/operate OP/LP, since cannot dismount or walk on terrain. 5 - Not observable.
Perform PMCS	NO					1 - Cannot perform PMCS on combat vehicle simulator (CVS).
Perform pre-fire ops	YES*	NO	NO	NO	NO	* - For a more detailed assessment refer to the Evaluation of Gunnery Activities. 2/3/4 - Machine guns not represented. 2/3/4 - Thermal Imaging System is not represented. 2/3/4 - Ballistics computer is not represented. 2/3/4 - Muzzle reference system is not represented. 2/3/4 - Stabilization drift controls are not represented. 2/3/4 - Main gun is assumed to be boresighted. 5 - Not observable from outside CVS.
Conduct refueling	YES	NO	NO	NO	YES	4 - Refueling procedure is too dissimilar from real world, expected transfer is nil. 2/3 - Method of refueling vehicles is unique to device.
Conduct resupply	YES	NO	NO	NO	YES	4 - Ammunition transfer procedure is too dissimilar from real world, expected transfer is nil. 2/3 - Method of ammunition transfer/resupply is unique to device.
Conduct radio checks	YES	YES	NO	YES	YES	3 - Radio/intercom is modified for device; civilian headsets and rocker switch on cable are used in place of CVC helmets with 3-position switch.
Rest	YES	YES	YES	YES	YES	
Receive briefing from TC on platoon mission	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
B. MOVEMENT PLATOON

Platoon Leader	If NO, Provide Comment (1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Select covered/concealed route to objective	YES	YES	NO	NO	NO	3 - Hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify terrain that provides adequate cover/concealment. 4 - Expected transfer is nil; inadequate cover/concealment. 5 - Not observable, infer from route taken during movement.
Identify LD/LC (line of departure is line of contact)	YES	YES	NO	NO	NO	3/4 - Given exact coordinates, can be easily identified using Grid-Azimuth-Indicator. 3 - Given terrain reference points, made difficult by lack of distinguishing terrain features, lack of visual equipment, lack of open hatch, and vision blocks reduced HFOV. 4 - Expected transfer is nil. 5 - Not observable.
Select/Initiate movement technique/formation	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 3 - Lack of terrain features permits execution of almost any formation at almost any point on the terrain. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 4 - Inability to use hand and arm signals could lead to overreliance on radio communication.
Establish/Control speed, direction of movement	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Estimating distance between objects is difficult. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed. 3 - Grid-Azimuth-Indicator, unique to device, can be used in place of a compass to determine cardinal direction/exact location. 3 - Display lacks cues (e.g., shadows) used in real world to determine cardinal direction. 4 - Expected transfer is nil, as a result of inadequate cues for speed and direction.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
B. MOVEMENT PLATOON (continued)

Platoon Leader (continued)	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
						If NO, Provide Comment
Lead platoon to objective following covered/concealed route	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Difficult to determine if adequate cover/concealment has been attained 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 4 - Expected transfer is nil, as a result of inadequate cover/concealment.
Report passage of LD/LC to TL	YES	YES	YES	YES	YES	
Monitor platoon location during movement	YES	YES	NO	NO	NO	3/4 - Grid-Azimuth-Indicator can be used to determine cardinal director or exact location, while halted. 3 - Graphics lack cues to determine direction (e.g., shadows, sun position). 3 - Hindered by lack of distinguishing terrain features. 4 - Expected transfer is nil. 5 - Not observable.
React to TL instructions/changes in movement	YES	YES	YES	YES	YES	
Relay changes in movement from TL to platoon	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to overreliance on radio communication.
Report control features to TL	YES	YES	NO	YES	YES	3 - Orienting a map using a compass, requires the use of the Grid-Azimuth-Indicator, which is unique to the device. 3 - Orienting a map by map-terrain association is difficult since the SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain reference points.
Control preplanned fires	YES	NO	NO	NO	NO	2/3/4 - Machine guns not represented; could become dependent on main gun engagements. 2/3 - Array of targets/target signatures represented is limited. 3 - Difficult to identify vehicles by type. 5 - Not observable, infer from fire commands.
Issue SPOTREP (if necessary)	YES	YES	NO	YES	YES	3 - Difficult to identify vehicles by type. 3 - Display lacks cues (e.g., shadows) used in real world to determine cardinal direction

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense) B. MOVEMENT PLATOON (continued) Platoon Sergeant	If NO, Provide Comment (1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Monitor/Control section movement/formation	YES	NO	NO	NO	YES	2 - Device does not allow for hand and arm signals to be issued. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed view. 3 - Estimating distance between objects is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 4 - Inability to use hand and arm signals could lead to overreliance on radio communication.
Monitor location of platoon, control features, route of movement	YES	YES	NO	NO	NO	3 - Graphics lack cues used to determine direction (e.g., shadows, sun position). 3 - Grid-Azimuth-Indicator can be used to determine cardinal direction or exact location, while halted. 3 - Hindered by lack of distinguishing terrain features. 4 - Expected transfer is nil. 5 - Not observable.
Control/Position section (if traveling overwatch is used)	YES	NO	NO	NO	YES	2 - Device does not allow for hand and arm signals to be issued. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed view. 3 - Estimating distance between objects is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 4 - Inability to use hand and arm signals could lead to overreliance on radio communication.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense) B. MOVEMENT PLATOON (continued)	If NO, Provide Comment (1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Tank Commanders						
Monitor/Control tank movement/position in formation	YES	YES	NO	YES	YES	3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Estimating distance between objects is difficult. lack of terrain features enables tanks to see each other almost. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 3 - Lack of terrain features enables tanks to see each other almost constantly while moving in formation.
Initiate Actions on Contact (if necessary)	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to overreliance on radio communication.
Crews						
Perform movement technique/formation drills	YES*					* - See performance element ratings listed under Movement Formations (Wedge, Line, Column, Vee, Echelon).
Assume direction/axis of movement, speed, interval (following PL's tank)	YES	YES	NO	YES	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3/4 - Estimating distance between objects is difficult; may develop unsafe habit of lasing to tanks to determine interval. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed. 3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation.
Move to objective using covered/concealed route	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Difficult to determine if adequate cover/concealment has been attained. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 4 - Expected transfer is nil, as a result of inadequate cover/ concealment.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense) B. MOVEMENT PLATOON (continued) Crews (continued)	If NO, Provide Comment (1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
						2/3 - Thermal Imagery System not represented. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed view. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode; TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters.
Maintain 360° ground and air security	YES	NO	NO	YES	NO	5 - Not observable.
Perform Action on Contact (as ordered)	YES*					* - See Actions on Contact for performance element ratings.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
C. OVERWATCH PLATOON

Platoon Leader	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
		If NO, Provide Comment				
Acknowledge TL's FRAGO	YES	YES	YES	YES	YES	
Determine location(s) of expected OPFOR contact	YES	YES	NO	NO	NO	3 - If done by surveying terrain, hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - Likely points of contact are difficult to identify on map or ground since there is little cover/concealment to cover possible OPFOR positions or movements; since there are few obstacles to movement and virtually all of the terrain is trafficable, contact may be expected at almost any location. 4 - Expected transfer is nil. 5 - Not observable, can be measured by knowledge test.
Select overwatch position providing fields of that provides observation/fire, cover, concealment	YES	YES	NO	NO	NO	3 - If done by surveying terrain, hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify providing adequate cover/concealment; and allowing for virtually unobstructed fields of observation/fire. 4 - Expected transfer is nil. 5 - Not observable, infer from position platoon occupies.
Select covered/concealed route(s) to overwatch position	YES	YES	NO	NO	NO	3 - If done by surveying terrain, hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify continuous terrain features that provide adequate cover/concealment. 4 - Expected transfer is nil; inadequate cover/concealment. 5 - Not observable, infer from route taken during movement.
Issue FRAGO to platoon to execute overwatch	YES	YES	YES	YES	YES	
Select/Initiate movement technique/formation	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 3 - Lack of terrain features permits execution of almost any formation at almost any point on the terrain. 3 - TC's HFOV limited to 60^0, TC can rotate cupola 300^0 with modified CWS power control handle. 4 - Inability to use hand and arm signals could lead to overreliance on radio communication.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
C. OVERWATCH PLATOON
(continued)

Platoon Leader (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Establish/Control speed, direction of movement	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Estimating distance between objects is difficult. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed. 3 - Grid-Azimuth-Indicator, unique to device, can be used in place of a compass to determine cardinal direction/exact location. 3 - Display lacks cues (e.g., shadows) used in real world to determine cardinal direction. 4 - Expected transfer is nil, as a result of inadequate cues for speed and direction.
Lead platoon to overwatch position following covered/ concealed route	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 3 - Difficult to determine if adequate cover/concealment has been attained. 4 - Expected transfer is nil, as a result of inadequate cues for speed and direction.
Assign/adjust overwatch sectors to TCs	YES	NO	NO	NO	YES	3 - Sectors are difficult to assign/adjust since SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain features. 2/3 - Cannot walk terrain to point/adjust out sectors to TCs. 3/4 - Grid-Azimuth-Indicator may be used to give exact location of sector boundaries; may lead to dependence on GAS. 4 - Expected transfer is nil, manner in which task must be performed is too dissimilar to real world.
Report/Signal arrival in overwatch position to TL	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to overreliance on radio communication.
Issue platoon suppressive fire command	YES	NO	NO	NO	YES	2/3 - Machine guns (preferred method of engagement) not represented. 3 - Array of targets/target signatures is limited. 3 - Difficult to identify vehicle by type. 4 - Could lead to overreliance on main gun engagements.

Evaluation of Tank Platoon Mission Performance Elements

MISSION I. MOVEMENT TO CONTACT (Offense)
C. OVERWATCH PLATOON
(continued)

Device Evaluated: SIMNET

Platoon Leader (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Control platoon suppressive fires	YES	NO	NO	NO	NO	2/3/4 - Machine guns (preferred method of engagement) not represented; could lead to overreliance on main gun engagements. 3 - Array of targets/target signatures is limited. 3 - Difficult to identify vehicles by type. 3 - Estimating distance between objects is difficult, hard to correct range and deflection errors using meters. 3 - Terrain features are not affected by artillery rounds; after burst there is no indication of where the round impacted. 5 - Not observable, infer from fire commands.
Selects subsequent overwatch position(s)	YES	YES	NO	NO	NO	3 - If done by surveying terrain, hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify terrain providing adequate cover/concealment; and allowing for virtually unobstructed fields of observation/fire. 4 - Expected transfer is nil. 5 - Not observable, can be measured by knowledge test.
Selects covered/concealed route to subsequent overwatch position	YES	YES	NO	NO	NO	3 - If done by surveying terrain, hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify continuous terrain that provides adequate cover/concealment. 4 - Expected transfer is nil; inadequate cover/concealment. 5 - Not observable, can be measured by knowledge test.
Designate subsequent overwatch position(s) and route(s) to TCs	YES	YES	NO	NO	YES	3 - Positions/routes are difficult to designate using terrain reference points since SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain features. 3 - Cannot walk terrain to point out positions/routes to TCs. 3 - Exact location of overwatch can be given by using Grid-Azimuth-Indicator. 4 - May lead to dependence on Grid-Azimuth-Indicator.
Alert TL by code word over radio if platoon cannot provide adequate overwatch	YES	YES	YES	YES	YES	
Adjust platoon overwatch position, as ordered by TL, to provide adequate overwatch	YES	YES	NO	YES	YES	3 - Lack of terrain features and vegetation allow for virtually unrestricted fields of observation. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION 1. MOVEMENT TO CONTACT (Offense)
C. OVERWATCH PLATOON (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader (continued)						
Adjust platoon sectors of observation, as directed by TL	YES	YES	NO	NO	YES	3 - Few distinguishing features to use when directing adjustment of sectors, cannot mark sectors. 3 - Grid-Azimuth-Indicator can be used to determine exact boundaries of sectors. 3 - Cannot walk terrain to point out sectors to TCs. 4 - Expected transfer is nil, manner in which task must be performed is too dissimilar to real world.
Submit SPOTREP to TL	YES	YES	NO	YES	YES	3 - Grid-Azimuth-Indicator, unique to device, can be used in place of a compass to determine cardinal direction/exact location. 3 - Difficult to identify vehicles by type. 3 - Display lacks cues (e.g., shadows) used in real world to determine cardinal direction
Monitor company net continuously	YES	YES	YES	YES	YES	
Initiate displacement to new overwatch position on TL's order	YES	NO	NO	NO	YES	2/3/4 - Hand and arm signals cannot be issued; may lead to overreliance on radio communications.
Platoon Sergeant						
Monitor section movement/formation	YES	NO	NO	NO	YES	2 - Device does not allow for hand and arm signals to be issued. 3 - Judging speed of other vehicles is difficult. 3 - Estimating distance between objects is difficult. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed view of tanks in formation. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 4 - Inability to use hand and arm signals could lead to overreliance on radio communication.
Adjust locations, positions, and sectors of tanks as needed	YES	YES	NO	NO	YES	3 - Repositioning is difficult since cover/concealment is sparse and difficult to exploit. 3 - There are few distinguishing terrain features to use when adjusting sectors, positions; Grid-Azimuth-Indicator may be used to give exact location of sectors, positions. 3 - Cannot walk terrain to point out sectors or direct positioning of tanks to TCs. 4 - Expected transfer is nil, manner in which task must be performed is too dissimilar to real world.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
C. OVERWATCH PLATOON
(continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Sergeant (continued)						
Monitor platoon ammunition expenditure	YES	YES	YES	YES	YES	
Monitor company net continuously	YES	YES	YES	YES	YES	
Tank Commanders						
Acknowledge PL's FRAGO	YES	YES	YES	YES	YES	
Monitor/Control tank movement/position in formation	YES	YES	NO	YES	YES	3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CMS power control handle. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - Lack of terrain features enables tanks to see each other almost constantly while moving in formation. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Estimating distance between objects is difficult.
Identify assigned overwatch position/sector	YES	YES	NO	NO	NO	3/4 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator. 3 - Given terrain reference points, made difficult by lack of distinguishing terrain features, lack of visual equipment, inability to walk terrain, lack of open hatch, and vision blocks restricted HFOV. 5 - Not observable.
Signal PL when in position	NO					1 - Device does not allow for hand and arm signals to be issued.
Select alternate firing position	YES	YES	NO	NO	NO	3 - If done by surveying terrain, hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify terrain providing adequate cover/concealment; and allowing for virtually unobstructed fields of observation/fire. 4 - Expected transfer is nil. 5 - Not observable.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION 1. MOVEMENT TO CONTACT (Offense)
C. OVERWATCH PLATOON
(continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Tank Commanders (continued)						
						3/4 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator. 3 - Given terrain reference points, made difficult by lack of distinguishing terrain features, lack of visual equipment, inability to walk terrain, lack of open hatch, and vision blocks restricted HFOV.
Identify assigned subsequent overwatch position/route	YES	YES	NO	NO	NO	5 - Not observable.
Report observations/engagements of OPFOR to PL	YES	YES	YES	YES	YES	
Report ammunition expenditures to PSG	YES	YES	NO	YES	YES	3 - Modified ammunition ready rack panel contains split-legend indicator lights, when illuminated the type of round in the well is identified, the well is empty when not illuminated.
Crews						
Perform movement technique/formation drills	YES*					* - See performance element ratings listed under Movement Formations (Wedge, Line, Column, Vee, Echelon).
Assume direction/axis of movement, speed, interval, following wingman	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3/4 - Estimating distance between objects is difficult; may develop unsafe habit of lasing to tanks to determine interval. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed. 3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation.
Move to overwatch position using covered/concealed route	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Difficult to determine if adequate cover/concealment has been attained. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 4 - Expected transfer is nil, as a result of inadequate cover/concealment.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
C. OVERWATCH PLATOON
(continued)

Crews (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com-ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Occupy hull down positions at overwatch position	YES	NO	NO	NO	YES	2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down. 3 - Crew cannot dismount to locate, adjust, verify cover/concealment/tank position. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify and occupy. 4 - Expected transfer is nil, inadequate cover and terrain.
Observe terrain dominating bounding element's axis of movement	YES	NO	NO	YES	NO	2/3 - Thermal Imagery System not represented. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed field of view. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode; TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 3 - Difficult to identify vehicles by type. 5 - Not observable, can be inferred from targets detected.
Adjust tank overwatch positions, as directed	YES	NO	NO	NO	YES	3 - Repositioning is difficult, since cover/concealment is sparse and hard to exploit. 2/3/4 - Crew cannot dismount to direct positioning of the vehicle.
Orient weapons in assigned sectors of responsibility	YES	YES	NO	YES	YES	3 - Turret/Gun-to-Hull Reference System Display, used to identify turret/gun tube orientation, is unique to device. 3 - TC/gunner/loader can become easily disoriented when gun tube is not pointed over front of vehicle.
Engage OPFOR antitank (AT) targets	YES*	NO	NO	NO	YES	* For a more detailed assessment refer to the Evaluation of Gunnery Activities. 2/3 - No degraded mode gunnery. 3 - Array of targets represented is limited. 2/3 - Thermal Imaging System is not represented. 2/3/4 - Machine guns not represented, could lead to overreliance on main gun engagements.
Deliver/adjust suppressive fires as directed	YES*	NO	NO	NO	YES	* For a more detailed assessment refer to the Evaluation of Gunnery Activities. 3 - Terrain features are not affected by artillery rounds; after burst there is no indication of where the round impacted. 3 - Estimating distance between objects is difficult, hard to correct range and deflection errors using meters. 2/3 - Machine guns (preferred method of engagement) not represented, could lead to overreliance on main gun engagements.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
C. OVERWATCH PLATOON
(continued)

Crews (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
						3 - Difficult to accomplish due to lack of distinguishing terrain features and inability to mark sectors. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode.
Adjust sector of observation, as directed	YES	YES	NO	YES	NO	5 - Not observable.
Back out of overwatch positions on PLs order to displace	YES	YES	NO	YES	YES	3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle.
Execute Actions on Contact	YES*					* - See performance element ratings listed under Actions on Contact.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
D. RECON BY FIRE

Platoon Leader	If NO, Provide Comment (1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Identify situation requiring recon by fire	YES	YES	YES	YES	NO	5 - Not observable.
Request permission from TL to conduct recon by fire	YES	YES	YES	YES	YES	
Identify expected location(s) of OPFOR contact	YES	YES	NO	NO	NO	3 - If done by surveying terrain, hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - Likely points of contact are difficult to identify on map or ground, since there is little cover/concealment to cover possible OPFOR positions or movements; since there are few obstacles to movement and virtually all of the terrain is trafficable, contact may be expected at almost any location. 4 - Expected transfer is nil. 5 - Not observable.
Identify overwatch position(s) providing cover, concealment, fields of fire	YES	YES	NO	NO	NO	3/4 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify terrain providing adequate cover/concealment; and allowing for virtually unobstructed fields of observation/fire. expected transfer is nil. 3 - If done by surveying terrain, hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 5 - Not observable.
Issue FRAGO to platoon	YES	YES	YES	YES	YES	
Select/Initiate movement technique/formation	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 3 - Lack of terrain features permits execution of almost any formation at almost any point on the terrain. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 4 - Inability to use hand and arm signals could lead to overreliance on radio communication.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
D. RECON BY FIRE
(continued)

Platoon Leader (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Establish/Control speed, direction of movement	YES	YES	NO	NO	Y	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Estimating distance between objects is difficult. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed. 3 - Grid-Azimuth-Indicator, unique to device, can be used in place of a compass to determine cardinal direction/exact location. 3 - Display lacks cues (e.g., shadows) used in real world to determine cardinal direction. 4 - Expected transfer is nil, as a result of inadequate cues for speed and direction.
Lead platoon to overwatch position following concealed route	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 3 - Difficult to determine if adequate cover/concealment has been attained. 4 - Expected transfer is nil, as a result of inadequate cues for speed and direction.
Request/Adjust indirect fires on expected OPFOR location(s)	YES	NO	NO	NO	YES	2/3 - Estimating distance is difficult; hard to correct range and deflection errors using meters. 2/3 - Terrain features are not affected by artillery round; after burst there is no indication of where the round impacted. 2/3/4 - Grid coordinates and cardinal direction can be determined using the Grid-Azimuth-Indicator, unique to device, in place of a compass.
(If indirect fire is not available or does not uncover OPFOR) Designate recon by fire:						
- Select/Identify target location	YES	YES	NO	NO	YES	3 - Exact location may be given using the Grid-Azimuth-Indicator. 3 - Difficult to designate location using terrain reference points due to lack of distinguishing terrain features. 4 - May lead to dependence on Grid-Azimuth-Indicator.
- Designate firing and observing tanks	YES	YES	YES	YES	YES	
- Designate number and type of rounds	YES	NO	NO	NO	YES	2/3/4 - Machine guns (preferred method of engagement) not represented, could lead to overreliance on main gun engagements.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
D. RECON BY FIRE
(continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader (continued)						
- Issue order to open fire	YES	YES	YES	YES	YES	
Report results of recon by fire to TL	YES	YES	YES	YES	YES	
Platoon Sergeant						
Monitor section movement/formation	YES	NO	NO	NO	YES	3 - Hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - Estimating distance between objects is difficult. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed view of tanks in formation. 2 - Device does not allow for hand and arm signals to be issued. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 4 - Inability to use hand and arm signals could lead to overreliance on radio communication.
Monitor platoon ammunition expenditure	YES	YES	YES	YES	YES	
Tank Commanders						
Monitor/Control tank movement/position in formation	YES	YES	NO	YES	YES	3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - Lack of terrain features enables tanks to see each other almost constantly while moving in formation. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Estimating distance between objects is difficult.
Report ammunition expenditures to PSG	YES	YES	NO	YES	YES	3 - Modified ammunition ready rack panel contains split-legend indicator lights, when illuminated the type of round in the well is identified, the well is empty when not illuminated.
Report results of recon by fire to PL	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
D. RECON BY FIRE
(continued)

Crews

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Perform movement technique/formation drills	YES*					* - See performance element ratings listed under Movement Formations (Wedge, Line, Column, Vee, Echelon).
Assume direction/axis of movement, speed, interval	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3/4 - Estimating distance between objects is difficult; may develop habit of lasing to tanks to determine interval. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed. 3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation.
Move to overwatch position using covered/concealed route	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Difficult to determine if adequate cover/concealment has been attained. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 4 - Expected transfer is nil, as a result of inadequate cover/ concealment
Occupy hull down position for observation or firing	YES	NO	NO	NO	YES	2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down. 3 - Crew cannot dismount to locate, adjust, verify cover/concealment/tank defilade. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify and occupy. 4 - Expected transfer is nil, inadequate cover and terrain.
Observe expected OPFOR location(s) for activity	YES	NO	NO	YES	NO	2/3 - Thermal Imagery System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed field of view. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 3 - Difficult to identify vehicles by type. 5 - Not observable, can be inferred from targets detected.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
D. RECON BY FIRE
(continued)

Crews (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Orient gun tubes on fire recon location	YES	YES	NO	YES	YES	3 - Turret/Gun-to-Hull Reference System Display, used to identify turret/gun tube orientation, is unique to device. 3 - TC/gunner/loader can become easily disoriented when gun tube is not pointed over front of vehicle.
Fire on order (recon by fire)	YES*	NO	NO	NO	YES	* For a more detailed assessment refer to the Evaluation of Gunnery Activities. 2/3 - No degraded mode gunnery. 3 - Array of targets represented is limited. 2/3 - Thermal Imaging System is not represented. 2/3/4 - Machine guns (preferred method of engagement) not represented, could lead to overreliance on main gun engagements.
Observe reaction to recon by fire	YES	NO	NO	YES	NO	2/3 - Thermal Imagery System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed field of view. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 5 - Not observable, can be inferred from targets detected.
Engage OPFOR targets uncovered	YES*	NO	NO	NO	YES	* For a more detailed assessment refer to the Evaluation of Gunnery Activities. 2/3 - No degraded mode gunnery. 3 - Array of targets represented is limited. 2/3 - Thermal Imaging System is not represented. 2/3/4 - Machine guns not represented, could lead to overreliance on main gun engagements.
Execute actions on contact	YES*					* - See performance element ratings listed under Actions on Contact.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense) E. FIRE AND MOVEMENT - MOVEMENT PLATOON Platoon Leader	If NO, Provide Comment (1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Acknowledge TL's FRAGO to move to objective	YES	YES	YES	YES	YES	
Identify location of assigned objective	YES	YES	NO	NO	NO	3/4 - Given exact coordinates, may easily be identified using Grid-Azimuth-Indicator; may lead to dependence on Grid-Azimuth-Indicator. 3 - Given terrain reference points, made difficult by lack of distinguishing terrain features, lack of open hatch, lack of open hatch, lack of visual equipment and vision blocks reduced HFOV. 5 - Not observable.
Select/Identify covered/concealed route to objective	YES	YES	NO	NO	NO	3 - If done by surveying terrain, hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3/4 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify, on map or ground, continuous terrain that provides adequate cover/concealment; expected transfer is nil. 5 - Not observable.
Select/Initiate movement technique/formation	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 3 - Lack of terrain features permits execution of almost any formation at almost any point on the terrain. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 4 - Inability to use hand and arm signals could lead to overreliance on radio communication.
Establish/Control speed, direction of movement	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Estimating distance between objects is difficult. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed. 3 - Grid-Azimuth-Indicator, unique to device, can be used in place of a compass to determine cardinal direction/exact location. 3 - Display lacks cues (e.g., shadows) used in real world to determine cardinal direction. 4 - Expected transfer is nil, as a result of inadequate cues for speed and direction.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense) E. FIRE AND MOVEMENT - MOVEMENT PLATOON (continued)	If NO, Provide Comment (1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader (continued)						
Lead platoon to objective following covered/concealed route	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 3 - Difficult to determine if adequate cover/concealment has been attained. 4 - Expected transfer is nil, as a result of inadequate cues for speed and direction.
(Optional) Issue order for platoon to employ on-board smoke	NO					1 - Smoke system is not represented.
Report to TL when platoon is closing on the objective	YES	YES	YES	YES	YES	
Platoon Sergeant						
Monitor section movement/formation	YES	NO	NO	NO	YES	2 - Device does not allow for hand and arm signals to be issued. 3 - Judging speed of other vehicles is difficult. 3 - Estimating distance between objects is difficult. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed view of tanks in formation. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 4 - Inability to use hand and arm signals could lead to overreliance on radio communication.
Tank Commanders						
Monitor/Control tank movement/position in formation	YES	YES	NO	YES	YES	3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - Lack of terrain features enables tanks to see each other almost constantly while moving in formation. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Estimating distance between objects is difficult.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION 1. MOVEMENT TO CONTACT (Offense)
E. FIRE AND MOVEMENT
- MOVEMENT PLATOON (continued)

Crews

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Perform movement technique/formation drills	YES*					* - See performance element ratings listed under Movement Formations (Wedge, Line, Column, Vee, Echelon).
Assume direction/axis of movement, speed, interval	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3/4 - Estimating distance between objects is difficult; may develop unsafe habit of lasing to tanks to determine interval. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed. 3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation.
Move to objective using covered/concealed route	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Difficult to determine if adequate cover/concealment has been attained. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 4 - Expected transfer is nil, as a result of inadequate cover/concealment.
Maintain 360° ground and air security	YES	NO	NO	YES	NO	2/3 - Thermal Imagery System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed field of view. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 3 - Difficult to identify vehicles by type. 5 - Not observable, can be inferred from targets detected.
Orient gun tubes on known or suspected enemy location	YES	YES	NO	YES	YES	3 - Turret/Gun-to-Hull Reference System Display, used to identify turret/gun tube orientation, is unique to device. 3 - TC/gunner/loader can become easily disoriented when gun tube is not pointed over front of vehicle.
(Optional) Employ on-board smoke on order	NO					1 - Smoke system not represented.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
E. FIRE AND MOVEMENT
- FIRE SUPPORT PLATOON

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader						
Acknowledge TL's FRAGO to support movement element	YES	YES	YES	YES	YES	
Assign tank positions	YES	NO	NO	NO	YES	3/4 - Grid-Azimuth-Indicator may be used to give exact location of positions; may lead to dependence on Grid-Azimuth-Indicator. 3 - Positions are difficult to assign/adjust since SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain features. 2/3 - Cannot walk terrain to point out positions to TCs. 4 - Expected transfer is nil, manner in which task must be performed is too dissimilar from real world.
Receive suppressive/support fire order from TL	YES	YES	YES	YES	YES	
Issue platoon suppressive/support fire order, specifying main gun/machine gun fire (e.g. "Support - One and Four")	YES	NO	NO	NO	YES	2/3/4 - Machine guns (preferred method of suppressive engagement) not represented. 4 - Could lead to overreliance on main gun engagements.
Issue order for observed fire (if ranges are extreme)	YES	YES	YES	YES	YES	
Monitor suppressive/support fire effects	YES	YES	YES	YES	NO	5 - Not observable.
Adjust suppressive/support fires and tank positions (as needed)	YES	NO	NO	NO	YES	2/3/4 - Machine guns (preferred method of suppressive engagement) not represented; could lead to overreliance on main gun engagements. 3 - Estimating distance between objects is difficult, hard to correct range and deflection errors using meters. 3 - Terrain features are not affected by artillery rounds; after burst there is no indication of where the round impacted.
Platoon Sergeant						
Adjust suppressive/support fires and tank positions in sector (as needed)	YES	NO	NO	[illegible]	YES	3 - Sectors are difficult to assign/adjust since SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain feature to use as reference points. 2/3/4 - Machine guns (preferred method of suppressive engagement) not represented; could lead to overreliance on main gun engagements. 3 - Estimating distance between objects is difficult, hard to correct range and deflection errors using meters. 3 - Terrain features are not affected by artillery rounds; after burst there is no indication of where the round impacted.
Control observed fire by section (if used)	YES	NO	NO	NO	YES	2/3/4 - Machine guns (preferred method of suppressive engagement) not represented; could lead to overreliance on main gun engagements.
Monitor platoon ammunition expenditures	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
E. FIRE AND MOVEMENT
- FIRE SUPPORT PLATOON (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Tank Commanders						
Identify assigned tank position	YES	YES	NO	NO	NO	3 - Given terrain reference points, identifying position made difficult by lack of distinguishing terrain features, lack of open hatch, lack of visual equipment, and vision blocks reduced HFOV. 3/4 - Given exact coordinates, position may be easily identified using Grid-Azimuth-Indicator; could lead to dependence on Grid-Azimuth-Indicator. 5 - Not observable.
Report ammunition expenditures to PSG	YES	YES	NO	YES	YES	3 - Modified ammunition ready rack panel contains split-legend indicator lights, when illuminated the type of round in the well is identified, the well is empty when not illuminated.
Crews						
Occupy hull down positions	YES	NO	NO	NO	YES	2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down. 3 - Crew cannot dismount to locate, adjust, verify cover/concealment/ tank position. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify. 4 - Expected transfer is nil, inadequate cover and terrain.
Adjust tank positions as directed/required	YES	NO	NO	NO	YES	3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 2/3/4 - Crew cannot dismount to direct positioning of the vehicle.
Observe in assigned sectors out to 3000 meters	YES	NO	NO	YES	NO	2/3 - Thermal Imagery System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed field of view. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 3 - Difficult to identify vehicles by type. 5 - Not observable, can be inferred from targets detected.
Deliver suppressive/support fires as directed	YES*	NO	NO	NO	YES	* For a more detailed assessment refer to the Evaluation of Gunnery Activities. 2/3/4 - Machine guns (preferred suppressive engagement) not represented, could lead to overreliance on main gun engagements.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense) E. FIRE AND MOVEMENT - FIRE SUPPORT PLATOON (continued)	If NO, Provide Comment (1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Crews (continued)						
Engage antitank/vehicle/hard targets within 3000 meters of position with main gun fire until destroyed	YES*	NO	NO	NO	YES	* For a more detailed assessment refer to the Evaluation of Gunnery Activities. 3 - Array of targets represented is limited. 2/3 - Thermal Imaging System is not represented. 2/3/4 - No degraded mode gunnery.
Adjust suppressive/support fires as directed	YES*	NO	NO	NO	YES	* For a more detailed assessment refer to the Evaluation of Gunnery Activities. 3 - Terrain features are not affected by artillery rounds; after burst there is no indication of where the round impacted. 3 - Estimating distance between objects is difficult, hard to correct range and deflection errors using meters. 2/3/4 - Machine guns (preferred suppressive engagement) not represented, could lead to overreliance on main gun engagements.
Employ observed fire by sector (as directed)	YES	YES	YES	YES	YES	
Monitor movement and masking by movement element	YES	NO	NO	YES	NO	2/3 - Thermal Imagery System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed field of view. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 3 - Difficult to identify vehicles by type. 5 - Not observable, can be inferred from targets detected.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
F. BYPASS

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader						
Acknowledge TL's FRAGO	YES	YES	YES	YES	YES	
Issue FRAGO to platoon	YES	YES	YES	YES	YES	
Identify OPFOR position to TCs	YES	YES	NO	YES	YES	3 - If done visually, must be from inside CVS and is hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - Few distinguishing terrain features to use as reference points. 3/4 - Grid-Azimuth-Indicator may be used to determine exact OPFOR location, may lead to dependence on Grid-Azimuth-Indicator.
Select covered/concealed route, that supports the mission, to bypass OPFOR position	YES	YES	NO	NO	NO	3 - If done by surveying terrain, hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify continuous terrain that provides adequate cover/concealment. 4 - Expected transfer is nil; inadequate cover/concealment. 5 - Not observable.
Request/Adjust indirect fires on expected OPFOR location(s)	YES	NO	NO	YES	YES	2/3 - Estimating distance is difficult; hard to correct range and deflection errors using meters. 2/3 - Terrain features are not affected by artillery round; after burst there is no indication of where the round impacted. 2/3 - Grid coordinates and cardinal direction can be determined using the Grid-Azimuth-Indicator, unique to device, in place of a compass.
Perform movement security using smoke (as required)	NO					1 - Smoke system is not represented.
Order platoon to bypass after smoke has screened platoon's route of movement (if smoke is required)	NO					1 - Smoke system is not represented.
Select/Initiate movement technique/formation	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 3 - Lack of terrain features permits execution of almost any formation at almost any point on the terrain. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 4 - Inability to use hand and arm signals could lead to overreliance on radio communication.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense) F. BYPASS (continued)	If NO, Provide Comment (1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader (continued)						
Establish/Control speed, direction of movement	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Estimating distance between objects is difficult. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed. 3 - Grid-Azimuth-Indicator, unique to device, can be used in place of a compass to determine cardinal direction/exact location. 3 - Display lacks cues (e.g., shadows) used in real world to determine cardinal direction. 4 - Expected transfer is nil, as a result of inadequate cues for speed and direction.
Lead platoon past OPFOR position following covered/ concealed route	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Difficult to determine if adequate cover/concealment has been attained. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 4 - Expected transfer is nil, as a result of inadequate cover/ concealment.
Submit reports on OPFOR situation to TL and overwatch element during bypass	YES	YES	NO	YES	YES	3 - Grid-Azimuth-Indicator, unique to device, can be used in place of a compass to determine cardinal direction/exact location. 3 - Difficult to identify vehicles by type. 3 - Display lacks cues (e.g., shadows) used in real world to determine cardinal direction
Submit complete SPOTREP on completion of bypass	YES	YES	NO	YES	YES	3 - Grid-Azimuth-Indicator, unique to device, can be used in place of a compass to determine cardinal direction/exact location. 3 - Difficult to identify vehicles by type. 3 - Display lacks cues (e.g., shadows) used in real world to determine cardinal direction

Evaluation of Tank Platoon Mission Performance Elements

MISSION I. MOVEMENT TO CONTACT (Offense)
F. BYPASS
(continued)

Device Evaluated: SIMNET

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Sergeant						
Monitor section movement/formation	YES	NO	NO	NO	YES	2 - Device does not allow for hand and arm signals to be issued. 3 - Judging speed of other vehicles is difficult. 3 - Estimating distance between objects is difficult. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed view of tanks in formation. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 4 - Inability to use hand and arm signals could lead to overreliance on radio communication.
Tank Commanders						
Monitor/Control tank movement/position in formation	YES	YES	NO	YES	YES	3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - Lack of terrain features enables tanks to see each other almost constantly while moving in formation. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Estimating distance between objects is difficult.
Crews						
Perform movement technique/formation drills	YES*					* - See performance element ratings listed under Movement Formations (Wedge, Line, Column, Vee, Echelon).
Assume direction/axis of movement, speed, interval	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3/4 - Estimating distance between objects is difficult; may develop unsafe habit of lasing to tanks to determine interval. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed. 3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
F. BYPASS
(continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Crews (continued)						
Move past OPFOR position using covered/concealed route	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Difficult to determine if adequate cover/concealment has been attained. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 4 - Expected transfer is nil, as a result of inadequate cover/ concealment.
Execute Contact Drill	YES*					* - See performance element ratings listed under Actions on Contact.
Fire to suppress/destroy OPFOR during bypass	YES*	NO	NO	NO	YES	* For a more detailed assessment refer to the Evaluation of Gunnery Activities. 2/3 - No degraded mode gunnery. 3 - Array of targets represented is limited. 2/3 - Thermal Imaging System is not represented. 2/3/4 - Machine guns (preferred suppressive engagement) not represented, could lead to overreliance on main gun engagements.
Establish/Maintain local all-around movement security during bypass	YES	NO	NO	YES	NO	2/3 - Thermal Imagery System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 5 - Not observable.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
G. HASTY ATTACK
- ASSAULT PLATOON

Platoon Leader	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
	If NO, Provide Comment					
Acknowledge receipt of FRAGO	YES	YES	YES	YES	YES	
Identify designated objective	YES	YES	NO	NO	NO	3/4 - Given exact coordinates, may easily identify position using Grid-Azimuth-Indicator; may lead to dependence on Grid-Azimuth-Indicator. 3 - Given terrain reference points, identifying position is made difficult by lack of distinguishing terrain features, lack of open hatch, lack of visual equipment, and vision blocks reduced HFOV. 5 - Not observable.
Determine last covered/concealed position before objective (i.e., assault position)	YES	YES	NO	NO	NO	3 - If done by surveying terrain, hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify adequate cover/concealment; and allowing for virtually unobstructed fields of observation/fire. 4 - Expected transfer is nil. 5 - Not observable.
Select covered/concealed route to assault position	YES	YES	NO	NO	NO	3 - If done by surveying terrain, hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify continuous terrain that provides adequate cover/concealment. 4 - Expected transfer is nil; inadequate cover/concealment. 5 - Not observable.
Issue FRAGO to platoon	YES	YES	YES	YES	YES	
Select/Initiate movement technique/formation	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 3 - Lack of terrain features permits execution of almost any formation at almost any point on the terrain. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 4 - Inability to use hand and arm signals could lead to overreliance on radio communication.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
G. HASTY ATTACK
- ASSAULT PLATOON (continued)

Platoon Leader (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Establish/Control speed, direction of movement	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Estimating distance between objects is difficult. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed. 3 - Grid-Azimuth-Indicator, unique to device, can be used in place of a compass to determine cardinal direction/exact location. 3 - Display lacks cues (e.g., shadows) used in real world to determine cardinal direction. 4 - Expected transfer is nil, as a result of inadequate cues for speed and direction.
Lead platoon to assault position following covered/concealed route	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 3 - Difficult to determine if adequate cover/concealment has been attained. 4 - Expected transfer is nil, as a result of inadequate cues for speed and direction.
Platoon in hide positions at assault position						
Determine if objective is defensible or not	YES	YES	NO	NO	NO	3 - Lack of adequate cover/concealment renders virtually all of terrain undefensible. 3/4 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify terrain that provides adequate cover/ concealment; expected transfer is nil. 5 - Not observable.
(Optional) If objective is defensible, direct platoon to occupy hull down firing positions on the objective upon completion of the assault	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
6. HASTY ATTACK
- ASSAULT PLATOON (continued)

Platoon Leader (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
(Optional) If objective is indefensible, select a defensible position behind or to the flanks of the objective; direct platoon to move to this position upon completion of the assault	YES	YES	NO	NO	NO	3/4 - Exact location of position can be determine using Grid-Azimuth-Indicator; could lead to dependence on Grid-Azimuth-Indicator. 3 - Few distinguishing terrain features which may be used as reference points when designating position. 3 - Visual survey of terrain is hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3/4 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify adequate cover/concealment; expected transfer is nil. 5 - Not observable.
Select best route along which to conduct the assault	YES	YES	NO	NO	NO	3 - Visual survey of terrain is hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3/4 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify continuous terrain that provides adequate cover/concealment; expected transfer is nil. 5 - Not observable.
Make an estimate of the situation to determine additional actions to be taken by the platoon prior to assault	YES	YES	YES	YES	NO	5 - Not observable, may be inferred from any directions given to platoon.
Submit complete SPOTREP to TL	YES	YES	NO	YES	YES	3 - Grid-Azimuth-Indicator, unique to device, can be used in place of a compass to determine cardinal direction/exact location. 3 - Difficult to identify vehicles by type. 3 - Display lacks cues (e.g., shadows) used in real world to determine cardinal direction.
Order platoon to assault after receiving order to assault from TL	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION 1. MOVEMENT TO CONTACT (Offense)
G. HASTY ATTACK
- ASSAULT PLATOON (continued)

Platoon Leader (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
						2 - Device does not allow for hand and arm signals to be issued. 3 - Judging speed of vehicle/other vehicles is difficult. 3/4 - Estimating distance between objects is difficult; could develop unsafe habit of lasing to tanks to determine interval. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed view of tanks in formation. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle.
Control interval and speed to maintain Line formation	YES	NO	NO	NO	YES	4 - Inability to use hand and arm signals could lead to overreliance on radio communication.
Lead platoon through the objective unless halted by TL	YES	YES	YES	YES	YES	
Continue assault until desirable terrain is reached	YES	YES	NO	NO	YES	3 - Difficult to determine if cover/concealment has been attained. 3/4 - Cover/concealment is difficult to exploit to terrain smoothing and sparse vegetation, expected transfer is nil.
Coordinate with support by fire platoon to shift fires as platoon crosses objective	YES	YES	YES	YES	YES	
Halt assault short of cresting high ground	YES	YES	NO	YES	YES	3 - Lack of open hatch makes it difficult to determine position on sloping terrain.
Assign/Adjust tank positions on/off objective	YES	YES	NO	NO	YES	3 - Can use Grid-Azimuth-Indicator to determine exact coordinates of positions. 3 - Positions are difficult to assign/adjust since SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain features. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 4 - Expected transfer is nil, manner in which task must be performed is too dissimilar to real world.
Report to TL once objective has been secured	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
G. HASTY ATTACK
- ASSAULT PLATOON (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Sergeant						
Monitor section movement/formation	YES	NO	NO	NO	YES	2 - Device does not allow for hand and arm signals to be issued. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 4 - Inability to use hand and arm signals could lead to overreliance on radio communication.
Direct/Adjust tank positions in sector (if required) during occupation of the objective	YES	YES	NO	NO	YES	3 - Can use Grid-Azimuth-Indicator to determine exact coordinates of positions. 3 - Positions are difficult to assign/adjust since SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain features. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 4 - Expected transfer is nil, manner in which task must be performed is too dissimilar to real world.
Monitor platoon ammunition expenditures	YES	YES	YES	YES	YES	
Tank Commanders						
Acknowledge PLs FRAGO	YES	YES	YES	YES	YES	
Monitor/Control tank movement/position in formation	YES	YES	NO	YES	YES	3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - Lack of terrain features enables tanks to see each other almost constantly while moving in formation. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Estimating distance between objects is difficult.
Report to PL when ready to assault	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
G. HASTY ATTACK
- ASSAULT PLATOON (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Tank Commanders (continued)						
Adjust intervals, monitor speed to maintain Line formation during assault	YES	YES	NO	NO	YES	3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - Lack of terrain features enables tanks to see each other almost constantly while moving in formation. 3 - Judging speed of vehicle/other vehicles is difficult. 3/4 - Estimating distance between objects is difficult; could lead to unsafe habit of lasing to tanks to determine interval.
Report ammunition expenditures to PSG	YES	YES	NO	YES	YES	3 - Modified ammunition ready rack panel contains split-legend indicator lights, when illuminated the type of round in the well is identified, the well is empty when not illuminated.
Crews						
Perform movement techniques/formation drills	YES*					* - See performance elements listed under Movement Formations (Wedge, Line, Column, Vee, Echelon)
Assume direction/axis of movement, speed, interval	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3/4 - Estimating distance between objects is difficult; could lead to unsafe habit of lasing to tanks to determine interval. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed. 3 - Driver's HFOV is 60°, compared to 170° in M1, making it difficult to monitor position of other vehicles in formation.
Move to last covered/concealed position before objective using covered/concealed route	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Difficult to determine if adequate cover/concealment has been attained. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 4 - Expected transfer is nil, as a result of inadequate cover/concealment

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
G. HASTY ATTACK
- ASSAULT PLATOON (continued)

Crews (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor.	(5) Observe Perform?	Comments
Maintain all-around movement security during movement	YES	NO	NO	YES	NO	3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed fields of view. 2/3 - Thermal Imagery System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode; TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 5 - Not observable.
Occupy hide positions at last covered/concealed position before objective	YES	NO	NO	NO	YES	2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down. 3 - Crew cannot dismount to locate, adjust, verify cover/concealment/tank defilade. 3 - Due to terrain smoothing, hide/hull/turret-down positions are scarce and difficult to identify and occupy. 4 - Expected transfer is nil, inadequate cover and terrain.
Perform check of weapons systems, vehicle, equipment while in hide positions	NO					1 - Cannot perform check on weapons system. 1 - Cannot perform PMCS.
Execute Line Formation Drill on PLs order to assault	YES*					* - See performance elements listed under Movement Formations (Wedge, Line, Column, Vee, Echelon)
React to obstacles and minefields by bypassing obstacles if possible	YES	NO	NO	NO	YES	2/3/4 - SIMNET terrain data base and corresponding terrain maps contain few obstacles (buildings, rivers); reinforced obstacles and mines are not represented. 3/4 - Obstacles have little effect on movement (e.g., vehicles are able to drive through tree lines).
Close hatches when moving on line (if assault is to be made through covering indirect fire)	NO					1 - CVS is always closed hatch, vehicle hatches are not represented; crew enters CVS through doors on side of simulator.
Engage OPFOR targets, concentrating on AT targets	YES*	NO	NO	NO	YES	* For a more detailed assessment refer to the Evaluation of Gunnery Activities. 2/3 - No degraded mode gunnery. 3 - Array of targets represented is limited. 2/3 - Thermal Imaging System is not represented. 2/3/4 - Machine guns not represented, could lead to overreliance on main gun engagements.
Halt short of cresting high ground during the assault, unless otherwise ordered	YES	YES	NO	YES	YES	3 - Lack of open hatch makes it difficult to determine position on sloping terrain.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
G. HASTY ATTACK
- ASSAULT PLATOON (continued)

Crews (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Occupy hull down positions on/off objective as directed	YES	NO	NO	NO	YES	2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down. 3 - Crew cannot dismount to locate, adjust, verify cover/concealment tank defilade. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify and occupy. 4 - Expected transfer is nil, inadequate cover and terrain.
Adjust tank positions as directed	YES	NO	NO	NO	YES	3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 2/3/4 - Crew cannot dismount to direct positioning of the vehicle.
Orient weapons toward expected counterattack	YES	YES	NO	YES	YES	3 - Turret/Gun-to-Hull Reference System Display, used to identify turret/gun tube orientation, is unique to device. 3 - TC/gunner/loader can become easily disoriented when gun tube is not pointed over front of vehicle.
Conduct consolidation and reorganization activities	YES*					* - See performance element ratings listed under Special Missions, Consolidation and Reorganization.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
G. HASTY ATTACK
- SUPPORT BY FIRE PLATOON

Platoon Leader	If NO, Provide Comment (1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Acknowledge TL's FRAGO	YES	YES	YES	YES	YES	
Analyze/Review FRAGO and formulate plan	YES	YES	YES	YES	NO	5 - Not observable.
Issue FRAGO to platoon	YES	YES	YES	YES	YES	
Direct platoon to occupy overwatch position	YES	YES	YES	YES	YES	
Report to TL when platoon is ready to support the assault	YES	YES	YES	YES	YES	
Issue platoon fire command for alternating fires prior to assault and as assault moves onto objective	YES	NO	NO	NO	YES	3 - Array of target/target signatures is limited. 2/3/4 - Machine guns not represented; could lead to overreliance on main gun engagements.
Issue platoon fire command for simultaneous fires once the TL orders assault force to conduct the assault	YES	NO	NO	NO	YES	3 - Array of target/target signatures is limited. 2/3/4 - Machine guns not represented; could lead to overreliance on main gun engagements.
Direct suppressive/support fires and tank repositioning, as needed	YES	NO	NO	NO	YES	2/3/4 - Machine guns (preferred suppressive engagement) not represented; could lead to overreliance on main gun engagements. 3 - Estimating distance between objects is difficult, hard to correct range and deflection errors using meters. 3 - Terrain features are not affected by artillery rounds; after burst there is no indication of where the round impacted.
Inform TL of fire support effects on targets	YES	YES	YES	YES	YES	
Identify assigned subsequent overwatch position	YES	YES	NO	NO	NO	3/4 - Given exact coordinates, may easily identify position using Grid-Azimuth-Indicator; may lead to dependence on Grid-Azimuth-Indicator. 3 - Given terrain reference points, identifying position is made difficult by lack of distinguishing terrain features, lack of open hatch, lack of visual equipment and vision blocks reduced HFOV. 5 - Not observable.
Identify covered/concealed route to subsequent overwatch position	YES	YES	NO	NO	NO	3 - Visual survey of terrain is hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3/4 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify continuous terrain that provides adequate cover/concealment; expected transfer is nil. 5 - Not observable.
(Optional) Specify to platoon when and how to break contact	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
G. HASTY ATTACK
- SUPPORT BY FIRE PLATOON (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader (continued)						
(Optional) Notify section in contact when to break contact (if displacing to subsequent overwatch position by section)	YES	YES	YES	YES	YES	
(Optional) Lead platoon to new overwatch position following covered/concealed route	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 3 - Difficult to determine if adequate cover/concealment has been attained. 4 - Expected transfer is nil, as a result of inadequate cues for speed and direction.
Platoon Sergeant						
Issue section fire command, if used	YES	NO	NO	NO	YES	3 - Array of target/target signatures is limited. 2/3/4 - Machine guns (preferred method of engagement) not represented; could lead to overreliance on main gun engagements.
Direct suppressive/support fires and tank repositioning, as needed	YES	NO	NO	NO	YES	3 - Sectors are difficult to assign/adjust since SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain features which may be used as reference points. 3 - Cannot walk terrain to point out positions to TCs. 4 - Expected transfer is nil, manner in which task must be performed is too dissimilar to real world. 2/3/4 - Machine guns (preferred method of suppressive engagement) not represented; could lead to overreliance on main gun engagements. 3 - Estimating distance between objects is difficult, hard to correct range and deflection errors using meters. 3 - Terrain features are not affected by artillery rounds; after burst there is no indication of where the round impacted.
Maintain contact with section until PL section displaces (if displacing to new overwatch position by section)	YES	YES	YES	YES	YES	
Monitor platoon ammunition expenditure	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
G. HASTY ATTACK
- SUPPORT BY FIRE PLATOON (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Tank Commanders						
Identify assigned tank position	YES	YES	NO	NO	NO	3/4 - Given exact coordinates, may easily identify position using Grid-Azimuth-Indicator; may lead to dependence on Grid-Azimuth-Indicator. 3 - Given terrain reference points, identifying position made difficult by lack of distinguishing terrain features, lack of open hatch, lack of visual equipment, and vision blocks reduced HFOV. 5 - Not observable.
Issue tank fire command	YES	NO	NO	NO	YES	3 - Array of target/target signatures is limited. 2/3/4 - Machine guns (preferred method of engagement) not represented; could lead to reliance on main gun engagements.
Report ammunition status to PSG	YES	YES	NO	YES	YES	3 - Modified ammunition ready rack panel contains split-legend indicator lights, when illuminated the type of round in the well is identified, the well is empty when not illuminated.
Crews						
Receive FRAGO from PL	YES	YES	YES	YES	YES	
Occupy turret down position at overwatch position	YES	NO	NO	NO	YES	2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is turret down. 3 - Crew cannot dismount to locate, adjust, verify cover/concealment/ tank position. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify and occupy. 4 - Expected transfer is nil, inadequate cover and terrain.
Observe in assigned sectors out to 3000 meters	YES	NO	NO	YES	NO	2/3 - Thermal Imagery System not represented. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed fields of view. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode; TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 5 - Not observable, can be inferred from targets detected.
Move from turret down to hull down position on fire order	YES	NO	NO	NO	YES	2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify and occupy. 4 - Expected transfer is nil, inadequate cover and terrain.

Evaluation of Tank Platoon Mission Performance Elements

MISSION I. MOVEMENT TO CONTACT (Offense)
G. HASTY ATTACK
- SUPPORT BY FIRE PLATOON (continued)

Device Evaluated: SIMNET

Crews (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com-ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Suppress/destroy visible targets with main gun	YES*	NO	NO	YES	YES	* For a more detailed assessment refer to the Evaluation of Gunnery Activities. 3 - Array of targets represented is limited. 2/3 - Thermal Imaging System is not represented. 2/3 - No degraded mode gunnery.
Suppress all targets/expected targets/dismounted troops with machine gun	NO					1 - Machine guns not represented.
Adjust suppressive/support fires and tank positions, as directed	YES*	NO	NO	NO	YES	3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 3 - Crew cannot dismount to locate, adjust, verify cover/concealment/ tank position. * For a more detailed assessment refer to the Evaluation of Gunnery Activities. 3 - Terrain features are not affected by artillery rounds; after burst there is no indication of where the round impacted. 3 - Estimating distance between objects is difficult, hard to correct range and deflection errors using meters. 2/3/4 - Machine guns not represented, could lead to overreliance on main gun engagements.
Back into turret down position after engagement(s)	YES	NO	NO	NO	YES	2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is turret down. 3 - Crew cannot dismount to locate, adjust, verify cover/concealment/ tank position. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 4 - Expected transfer is nil, inadequate cover and terrain.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION I. MOVEMENT TO CONTACT (Offense)
G. HASTY ATTACK
- SUPPORT BY FIRE PLATOON (continued)

Crews (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Monitor movement of assault forces	YES	NO	NO	YES	NO	2/3 - Thermal Imagery System not represented. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed fields of view. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode; TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 5 - Not observable, can be inferred from targets detected.
Shift supporting fires to adjacent OPFOR position as assault force moves onto and across objective	YES*	NO	NO	NO	YES	* For a more detailed assessment refer to the Evaluation of Gunnery Activities. 3 - Terrain features are not affected by artillery rounds; after burst there is no indication of where the round impacted 3 - Estimating distance between objects is difficult, hard to correct range and deflection errors using meters. 2/3/4 - Machine guns not represented, could lead to overreliance on main gun engagements.
(Optional) Back out of overwatch positions on PL's order to displace to next objective	YES	YES	NO	YES	YES	3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues.
(Optional) Move to new overwatch position using covered/concealed route	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Difficult to determine if adequate cover/concealment has been attained. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 4 - Expected transfer is nil, as a result of inadequate cover/concealment.

Appendix C

An Analysis of the Simulation of Tank Platoon Defensive Operations on SIMNET

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
A. PREPARATION OF DELIBERATE BATTLE POSITION

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader						
Receive/Analyze OPORD from Team Leader	YES	YES	YES	YES	NO	5 - Not observable.
Issue warning order to TCs	YES	YES	YES	YES	YES	
Move to battle position	YES	YES	NO	YES	YES	3 - Cannot dismount or walk on terrain, movement to BP must be by CVS.
Post security elements to provide local security	NO					1 - Cannot establish security on surrounding terrain, since cannot dismount or walk on terrain.
Conduct reconnaissance of battle position:	YES	YES	NO	NO	NO	3/4 - Orienting a map using a compass, requires the use of the Grid-Azimuth-Indicator, unique to device. TCs may become reliant on Grid-Azimuth-Indicator. 3/4 - Orienting a map by map-terrain association is difficult since the SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain features or vegetation that can be used as reference points. 3 - Ground recon must be conducted from within CVS and is therefore hindered by lack of open hatch mode, inability to walk terrain, vision blocks restricted HFOV, and inability to utilize visual equipment. 5 - Not observable.
- Identify location of company battle position	YES	YES	NO	NO	NO	3/4 - Difficult to identify points on a map on the ground by map-terrain association due to lack of terrain reference points. Expected transfer is nil. 3/4 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator; could lead to reliance on Grid-Azimuth-Indicator. 5 - Not observable.
- Identify avenues of approach	YES	YES	NO	NO	NO	3/4 - Likely avenues of approach are difficult to identify since virtually the entire terrain database is trafficable, and terrain provides little cover to conceal movement. 5 - Not observable.
- Identify company target reference points	YES	YES	NO	NO	NO	3/4 - Difficult to identify points on a map on the ground by map-terrain association due to lack of terrain reference points. Expected transfer is nil. 3/4 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator; could lead to reliance on Grid-Azimuth-Indicator. 5 - Not observable.
- Identify company engagement areas	YES	YES	NO	NO	NO	3/4 - Difficult to identify points on a map on the ground by map-terrain association due to lack of terrain reference points. Expected transfer is nil. 3/4 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator; could lead to reliance on Grid-Azimuth-Indicator. 5 - Not observable.

Evaluation of Tank Platoon Mission Performance Elements

MISSION II. DEFENSE (Battle Position)
A. PREPARATION OF DELIBERATE BATTLE POSITION (continued)

Device Evaluated: SIMNET

Platoon Leader (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
- Identify limits of platoon battle position	YES	YES	NO	NO	NO	3/4 - Difficult to identify points on a map on the ground by map-terrain association due to lack of terrain reference points. Expected transfer is nil. 3/4 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator; could lead to reliance on Grid-Azimuth-Indicator. 5 - Not observable.
- Determine adequacy of assigned position	YES	YES	NO	NO	NO	3/4 - Manner in which reconnaissance must be conducted on device (inability to dismount and walk terrain or to utilize visual equipment) results in collection of information that is generally insufficient to determine adequacy of plans. 5 - Not observable.
- Coordinate adjustment of position with TL	YES	YES	NO	YES	YES	3 - Terrain is difficult to exploit due to lack of cover/concealment and terrain smoothing.
- Identify platoon sector of fire	YES	YES	NO	NO	NO	3/4 - Difficult to identify points on a map on the ground by map-terrain association due to lack of terrain reference points. Expected transfer is nil. 3/4 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator; could lead to reliance on Grid-Azimuth-Indicator. 5 - Not observable.
- Identify location of artillery pre-plots	YES	YES	NO	NO	NO	3/4 - Difficult to identify points on a map on the ground by map-terrain association due to lack of terrain reference points. Expected transfer is nil. 3/4 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator; could lead to reliance on Grid-Azimuth-Indicator. 5 - Not observable.
- Select primary firing positions	YES	YES	NO	NO	NO	3 - If done by surveying terrain, hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few smoothed terrain features, sparse vegetation, and smoothed terrain, making it difficult to identify terrain providing adequate cover/concealment, and allowing for virtually unobstructed fields of observation/fire. 4 - Expected transfer is nil. 5 - Not observable, can be measured by knowledge test.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
A. PREPARATION OF DELIBERATE BATTLE POSITION (continued)

Platoon Leader (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
- Select supplementary firing positions	YES	YES	NO	NO	NO	3 - If done by surveying terrain, hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few smoothed terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify terrain providing adequate cover/concealment; and allowing for virtually unobstructed fields of observation/fire. 4 - Expected transfer is nil. 5 - Not observable, can be measured by knowledge test.
- Select covered and concealed routes between primary and supplementary firing positions	YES	YES	NO	NO	NO	3 - If done by surveying terrain, hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify continuous terrain that provides adequate cover/concealment. 4 - Expected transfer is nil; inadequate cover/concealment. 5 - Not observable, can be measured by knowledge test.
- Select covered and concealed routes in and out of primary battle position to subsequent battle position	YES	YES	NO	NO	NO	3 - If done by surveying terrain, hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify continuous terrain that provides adequate cover/concealment. 4 - Expected transfer is nil; inadequate cover/concealment. 5 - Not observable, can be measured by knowledge test.
- Select location for OPs to provide observation of the platoon's sector of fire	NO					1 - Cannot establish/operate OPs, since cannot walk on terrain.
- Identify location of existing obstacles and select positions for reinforcing obstacles	YES	NO	NO	NO	NO	2/3/4 - SIMNET terrain database and corresponding terrain maps contain few obstacles (buildings, rivers); reinforced obstacles and mines are not represented. 5 - Not observable.
Develop a rough draft of a platoon fire plan	YES	YES	NO	YES	YES	3 - Lack of distinguishing terrain reference points makes identifying control measures on the ground and ensuring that tank sectors overlap more difficult. 3 - Lack of terrain features and terrain smoothing allows for virtually unrestricted fields of fire.
Prepare platoon OPORD	YES	YES	YES	YES	NO	5 - Not observable.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
A. PREPARATION OF DELIBERATE BATTLE POSITION (continued)

Platoon Leader (continued)	(1) Perform/ Practice?	(2) All Com-ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
	If NO, Provide Comment					
Return to platoon assembly area	YES	YES	NO	YES	YES	3 - Cannot dismount or walk on terrain, movement must be by CVS.
Issue OPORD	YES	YES	YES	YES	YES	
Direct platoon move to hide position behind battle position and execute actions at a halt	YES	YES	YES	YES	YES	
Designate location of observation post	NO					1 - Crew cannot dismount on terrain to establish/operate an OP.
Move with TCs and OP personnel to battle position	YES	YES	NO	YES	YES	3 - Cannot dismount or walk on terrain, movement to BP must be by CVS.
Identify for TCs and OP personnel:						
- Company battle position	YES	NO	NO	NO	YES	2/3/4 - Must be done by giving out terrain reference points and/or grid coordinates, since cannot dismount to recon terrain with TCs. 4 - Few distinctive terrain features and vegetation that may be used as reference points.
- Limit of platoon's battle position	YES	NO	NO	NO	YES	2/3/4 - Must be done by giving out terrain reference points and/or grid coordinates, since cannot dismount to recon terrain with TCs. 4 - Few distinctive terrain features and vegetation that may be used as reference points.
- Platoon's sector of fire	YES	NO	NO	NO	YES	2/3/4 - Must be done by giving out terrain reference points and/or grid coordinates, since cannot dismount to recon terrain with TCs. 4 - Few distinctive terrain features and vegetation that ma;y be used as reference points.
- Location of artillery pre-plots	YES	NO	NO	NO	YES	2/3/4 - Must be done by giving out terrain reference points and/or grid coordinates, since cannot dismount to recon terrain with TCs. 4 - Few distinctive terrain features and vegetation that may be used as reference points.
- Location of existing obstacles and positions for reinforcing obstacles	YES	NO	NO	NO	YES	2/3/4 - SIMNET terrain data base and corresponding terrain maps contain few obstacles (buildings, rivers); reinforced obstacles and mines are not represented. 2/3/4 - Must be done by map or from inside CVS by giving out terrain reference points and/or grid coordinates, since cannot dismount to recon terrain with TCs. 4 - Few distinctive terrain features and vegetation that may be used as reference points.
- Location of target reference points/engagement areas	YES	NO	NO	NO	YES	2/3/4 - Must be done by map or from inside CVS by giving out terrain reference points and/or grid coordinates, since cannot dismount to recon terrain with TCs. 4 - Few distinctive terrain features and vegetation that may be used as reference points.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
A. PREPARATION OF DELIBERATE BATTLE POSITION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com-ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader (continued)						
- Location of observation posts	NO					1 - Crew cannot dismount on terrain to establish/operate an OP. 2/3/4 - Must be done by map or from inside CVS by giving out terrain reference points and/or grid coordinates, since cannot dismount to recon terrain with TCs. 4 - Few distinctive terrain features and vegetation that may be used as reference points.
- Primary and supplementary positions	YES	NO	NO	NO	YES	2/3/4 - Must be done by map or from inside CVS by giving out terrain reference points and/or grid coordinates, since cannot dismount to recon terrain with TCs. 4 - Few distinctive terrain features and vegetation that may be used as reference points.
- Sectors of fire	YES	NO	NO	NO	YES	2/3/4 - Must be done by map or from inside CVS by giving out terrain reference points and/or grid coordinates, since cannot dismount to recon terrain with TCs. 4 - Few distinctive terrain features and vegetation that may be used as reference points.
- Location of final protective fire	YES	NO	NO	NO	YES	2/3/4 - Must be done by map or from inside CVS by giving out terrain reference points and/or grid coordinates, since cannot dismount to recon terrain with TCs. 4 - Few distinctive terrain features and vegetation that may be used as reference points.
- Routes between primary and supplementary firing positions	YES	NO	NO	NO	YES	2/3/4 - Must be done by map or from inside CVS by giving out terrain reference points and/or grid coordinates, since cannot dismount to recon terrain with TCs. 4 - Few distinctive terrain features and vegetation that may be used as reference points.
- Routes in and out of the primary battle position to subsequent positions	YES	NO	NO	NO	YES	2/3/4 - Must be done by map or from inside CVS by giving out terrain reference points and/or grid coordinates, since cannot dismount to recon terrain with TCs. 4 - Few distinctive terrain features and vegetation that may be used as reference points.
Signal tanks to move to hide positions behind their primary firing positions	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to reliance on radio communication.
Signal/order tanks to move to turret-down positions	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to reliance on radio communication.
Signal/order tanks to move to hull-down positions	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to reliance on radio communication.
Direct tanks to shut down engines	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to reliance on radio communication.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
A. PREPARATION OF DELIBERATE BATTLE POSITION (continued)

Platoon Leader (continued)	(1) Perform/ Practice?	(2) All Com-ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
						3 - Lack of distinguishing terrain reference points makes identifying control measures on the ground and ensuring that tank sectors overlap more difficult.
Consolidate sketch range cards	YES	YES	NO	YES	YES	3 - Lack of terrain features and terrain smoothing allows for virtually unrestricted fields of fire.
						3 - Lack of distinguishing terrain reference points makes identifying control measures on the ground and ensuring that tank sectors overlap more difficult.
Develop final platoon fire plan	YES	YES	NO	YES	YES	3 - Lack of terrain features and terrain smoothing allows for virtually unrestricted fields of fire.
						3 - Orienting a map using a compass, require the use of the Grid-Azimuth-Indicator, which is unique to the device.
						3 - Orienting a map by map-terrain association is difficult since the SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain features or vegetation that can be used as reference points.
Review indirect fire plan target list/request additional targets	YES	YES	NO	NO	NO	4 - TCs may learn to rely on Grid-Azimuth indicator, not present on real vehicle.
Send platoon fire plan to Team Leader	YES	YES	YES	YES	YES	
Issue copies of platoon fire plan to TCs	YES	YES	YES	YES	YES	
Report to team leader that battle position has been established	YES	YES	YES	YES	YES	
Direct platoon to improve battle position	NO					1 - Terrain cannot be altered, improved, or fortified in any manner.
Coordinate defense with adjacent units	YES	YES	YES	YES	YES	
Coordinate with Company XO and attached engineers to:						
- Reinforce hull-down positions	NO					1 - Engineer support is not represented. 1 - Terrain cannot be altered, improved, or fortified in any manner.
- Improve routes between firing positions	NO					1 - Engineer support is not represented. 1 - Terrain cannot be altered, improved, or fortified in any manner.
- Improve displacement routes	NO					1 - Engineer support is not represented. 1 - Terrain cannot be altered, improved, or fortified in any manner.
- Improve countermobility plan	NO					1 - Engineer support is not represented. 1 - Terrain cannot be altered, improved, or fortified in any manner.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
A. PREPARATION OF DELIBERATE BATTLE POSITION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Sergeant						
Receive warning order	YES	YES	YES	YES	YES	
Organize/supervise resupply	YES	YES	YES	YES	YES	2/3 - Method of refueling vehicles is unique to device. 2/3 - Method of ammunition transfer/resupply is unique to device. 2/3 - Sensory cues used to diagnose faults are limited. 2/3 - Cannot perform PMCS. 2/3 - Limited number of faults that can be diagnosed through SIMNET troubleshooting index. 2/3 - For some operational faults (i.e., thrown/broken tracks, vision blocks, and radio/intercoms) the crew must wait a specified period of time (the average repair time) before continuing.
Supervise platoon preparation/maintenance	YES	NO	NO	NO	YES	4 - Refueling, ammunition transfer, and maintenance are too dissimilar from real world, expected transfer is nil.
Join platoon leader on battle position	YES	YES	NO	YES	YES	3 - Cannot walk on terrain, movement to BP must be in CVS.
Direct OP personnel to establish an observation post	NO					1 - Crew cannot dismount on terrain to establish/operate an OP.
Prepare platoon for movement	YES	YES	YES	YES	YES	3/4 - Made more difficult by absence of prepared positions and terrain smoothing.
Assist in positioning tanks in primary and supplementary positions	YES	NO	NO	NO	YES	2/3/4 - Cannot dismount to direct tanks into positions, must be done by observing from within the CVS as tanks occupy positions and giving directions over the radio; expected transfer is nil, could lead to overreliance on radio.
Check alternate positions	YES	NO	NO	NO	NO	3 - Must be checked from inside CVS since cannot dismount or walk on terrain. 3 - Cannot dismount to check tank defilade. 2/3/4 - Alternate positions cannot be prepared or marked. 5 - Not observable
Check/collect sketch range cards	YES	YES	YES	YES	YES	3 - Must be checked from inside CVS since cannot dismount or walk on terrain. 3 - Cannot dismount to check tank defilade.
Assist PL in preparation of platoon fire plan	YES	YES	NO	YES	YES	3 - Lack of distinguishing terrain reference points makes identifying control measures on the ground and ensuring that tank sectors overlap more difficult. 3 - Lack of terrain features and terrain smoothing allows for virtually unrestricted fields of fire.
Supervise/coordinate obstacle emplacement	NO					1 - Terrain cannot be altered, improved, or fortified in any manner.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
A. PREPARATION OF DELIBERATE BATTLE POSITION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Sergeant (continued)						
Supervise hot loop/wire installation	NO					1 - Terrain cannot be altered, improved, or fortified in any manner.
Supervise installation of chemical detectors	NO					1 - Terrain cannot be altered, improved, or fortified in any manner.
Supervise camouflage of tanks	NO					1 - Crew cannot dismount to camouflage vehicle.
Coordinate with infantry squads	NO					1 - Infantry not represented.
Coordinate with Company XO and attached engineers to:						
- Improve firing positions	NO					1 - Terrain cannot be altered, improved, or fortified in any manner.
- Improve routes between firing positions	NO					1 - Terrain cannot be altered, improved, or fortified in any manner.
- Improve displacement routes	NO					1 - Terrain cannot be altered, improved, or fortified in any manner.
- Improve countermobility plan	NO					1 - Terrain cannot be altered, improved, or fortified in any manner.
Tank Commanders						
Receive platoon warning order	YES	YES	YES	YES	YES	
Receive platoon OPORD	YES	YES	YES	YES	YES	
Join platoon leader on battle position	YES	YES	NO	YES	YES	3 - Cannot walk on terrain, movement to BP must be in CVS.
Identify:						
- Company battle position	YES	YES	NO	NO	NO	3 - Must be done by map, or from inside CVS which is hindered by lack of open hatch mode, vision blocks restricted HFOV, and inability to utilize visual equipment. 3 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator. 3 - Given terrain reference points, difficult to identify due to lack of distinguishing terrain features. 4 - TCs may learn to rely on Grid-Azimuth indicator, not present on real vehicle. Inadequate terrain. 5 - Not observable.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
A. PREPARATION OF DELIBERATE BATTLE POSITION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Tank Commanders (continued)						
- Company target reference points	YES	YES	NO	NO	NO	3 - Must be done by map, or from inside CVS which is hindered by lack of open hatch mode, vision blocks restricted HFOV, and inability to utilize visual equipment. 3 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator. 3 - Given terrain reference points, difficult to identify due to lack of distinguishing terrain features. 4 - TCs may learn to rely on Grid-Azimuth indicator, not present on real vehicle. Inadequate terrain. 5 - Not observable.
- Engagement areas	YES	YES	NO	NO	NO	3 - Must be done by map, or from inside CVS which is hindered by lack of open hatch mode, vision blocks restricted HFOV, and inability to utilize visual equipment. 3 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator. 3 - Given terrain reference points, difficult to identify due to lack of distinguishing terrain features. 4 - TCs may learn to rely on Grid-Azimuth indicator, not present on real vehicle. Inadequate terrain. 5 - Not observable.
- FPF	YES	YES	NO	NO	NO	3 - Must be done by map, or from inside CVS which is hindered by lack of open hatch mode, vision blocks restricted HFOV, and inability to utilize visual equipment. 3 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator. 3 - Given terrain reference points, difficult to identify due to lack of distinguishing terrain features. 4 - TCs may learn to rely on Grid-Azimuth indicator, not present on real vehicle. Inadequate terrain. 5 - Not observable.
- Location of artillery pre-plots	YES	YES	NO	NO	NO	3 - Must be done by map, or from inside CVS which is hindered by lack of open hatch mode, vision blocks restricted HFOV, and inability to utilize visual equipment. 3 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator. 3 - Given terrain reference points, difficult to identify due to lack of distinguishing terrain features. 4 - TCs may learn to rely on Grid-Azimuth indicator, not present on real vehicle. Inadequate terrain. 5 - Not observable.
- Location of observation posts	NO					1 - Crew cannot dismount on terrain to establish/operate an OP.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
A. PREPARATION OF DELIBERATE BATTLE POSITION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Tank Commanders (continued)						
- Primary and supplementary positions	YES	YES	NO	NO	NO	3 - Must be done by map, or from inside CVS which is hindered by lack of open hatch mode, vision blocks restricted HFOV, and inability to utilize visual equipment. 3 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator. 3 - Given terrain reference points, difficult to identify due to lack of distinguishing terrain features. 4 - TCs may learn to rely on Grid-Azimuth indicator, not present on real vehicle. Inadequate terrain. 5 - Not observable.
- Sectors of fire	YES	YES	NO	NO	NO	3 - Must be done by map, or from inside CVS which is hindered by lack of open hatch mode, vision blocks restricted HFOV, and inability to utilize visual equipment. 3 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator. 3 - Given terrain reference points, difficult to identify due to lack of distinguishing terrain features. 4 - TCs may learn to rely on Grid-Azimuth indicator, not present on real vehicle. Inadequate terrain. 5 - Not observable.
- Routes between primary and supplementary positions	YES	YES	NO	NO	NO	3 - Must be done by map, or from inside CVS which is hindered by lack of open hatch mode, vision blocks restricted HFOV, and inability to utilize visual equipment. 3 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator. 3 - Given terrain reference points, difficult to identify due to lack of distinguishing terrain features. 4 - TCs may learn to rely on Grid-Azimuth indicator, not present on real vehicle. Inadequate terrain. 5 - Not observable.
- Routes in and out of primary position to subsequent battle positions	YES	YES	NO	NO	NO	3 - Must be done by map, or from inside CVS which is hindered by lack of open hatch mode, vision blocks restricted HFOV, and inability to utilize visual equipment. 3 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator. 3 - Given terrain reference points, difficult to identify due to lack of distinguishing terrain features. 4 - TCs may learn to rely on Grid-Azimuth indicator, not present on real vehicle. Inadequate terrain. 5 - Not observable.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
A. PREPARATION OF DELIBERATE BATTLE POSITION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Tank Commanders (continued)						
Return to vehicle	YES	YES	YES	YES	YES	
Direct engine be started upon receiving hand-and-arm signals	YES	YES	YES	YES	YES	
Direct driver to hide position behind primary firing position	YES	YES	NO	NO	YES	3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 3 - Hide, turret-down, and hull down positions are scarce, difficult to identify, occupy and verify, due to terrain smoothing and lack of vegetation. 4 - Expected transfer is nil, inadequate cover/concealment.
Orient crews to hide position and location of turret-down	YES	NO	NO	NO	YES	3 - Positions are difficult to identify since they cannot be improved or or marked and due to lack of terrain features. 2/3/4 - Must be done visually from inside CVS or by map, since cannot dismount to recon terrain with crew.
Signal platoon leader when ready	YES	YES	YES	YES	YES	
Direct driver to turret-down position	YES	NO	NO	NO	YES	2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine when vehicle is hull-turret-down. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 3 - Hide, turret-down, and hull down positions are scarce, difficult to identify, occupy, and verify, due to terrain smoothing and lack of vegetation. 4 - Expected transfer is nil, inadequate cover/concealment.
Orient crews to turret-down position and location of hull down	YES	YES	NO	NO	YES	2/3/4 - Must be done visually from inside CVS or by map, since cannot dismount to recon terrain with crew. 3 - Positions are difficult to identify since they cannot be improved or marked due to lack of terrain features.
Signal platoon leader when ready	YES	YES	YES	YES	YES	
Direct driver to hull-down position	YES	NO	NO	NO	YES	2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine when vehicle is hull/turret-down. 3 - Routes cannot be marked for identification. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 3 - Hide, turret-down, and hull down positions are scarce, difficult to identify, occupy, and verify, due to terrain smoothing and lack of vegetation. 4 - Expected transfer is nil, inadequate cover/concealment.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
A. PREPARATION OF DELIBERATE BATTLE POSITION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Tank Commanders (continued)						
Brief crew on OPORD	YES	YES	YES	YES	YES	2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine when vehicle is hull/turret-down. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of the vehicle. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 3 - Hide, turret-down, and hull down positions are scarce, difficult to identify, occupy, and verify, due to terrain smoothing and lack of vegetation.
Direct driver to back down to hide position	YES	NO	NO	NO	YES	4 - Expected transfer is nil, inadequate cover/concealment.
Directs loader to deliver sketch range card to PL	YES	YES	YES	YES	YES	3 - Hindered by lack of open hatch mode, inability to walk terrain, vision blocks restricted HFOV, and inability to utilize visual equipment. must be done from within CVS or by map. 3 - Lack of distinguishing terrain reference points makes ensuring that sectors overlap difficult.
Coordinate sectors with adjacent tanks	YES	YES	NO	YES	NO	5 - Not observable.
Establish rest/watch cycles	YES	YES	YES	YES	YES	
Crews						
Provide local security at battle position while platoon leader conducts reconnaissance	NO					1 - Personnel cannot dismount to establish security on surrounding terrain
Perform resupply	YES	NO	NO	NO	YES	2/3 - Method of refueling vehicles is unique to device. 2/3 - Method of ammunition transfer/resupply is unique to device. 4 - Refueling, ammunition transfer, and maintenance are too dissimilar from real world, expected transfer is nil.
Perform maintenance	YES	NO	NO	NO	YES	2/3 - Sensory cues used to diagnose faults are limited. 2/3 - Cannot perform PMCS. 2/3 - Limited number of faults that can be diagnosed through SIMNET troubleshooting index. 2/3 - For some operational faults (i.e., thrown/broken tracks, vision blocks, and radio/intercoms) the crew must wait a specified period of time (the average repair time) before continuing. 4 - Maintenance procedures are too dissimilar from real world.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
A. PREPARATION OF DELIBERATE BATTLE POSITION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Crews (continued)						
Perform before operations checks and services	NO					1 - Cannot perform PMCS
Move into a hide position behind the battle position	YES	NO	NO	NO	YES	2/3 - Crew cannot dismount to locate, adjust, verify cover/concealment/tank position. 3 - Due to terrain smoothing, hull/turret-down/hide positions are scarce and difficult to identify. 4 - Expected transfer is nil, inadequate cover and terrain.
Executes actions at a halt	YES	NO	NO	NO	YES	2/3 - Cannot dismount to establish/operate OP. 2/3 - Method of refueling vehicles is unique to device. 2/3 - Method of ammunition transfer/resupply is unique to device. 2/3 - Sensory cues used to diagnose faults are limited. 2/3 - Cannot perform PMCS. 2/3 - Limited number of faults that can be diagnosed through SIMNET troubleshooting index. 2/3 - For some operational faults (i.e., thrown/broken tracks, vision blocks, and radio/intercoms) the crew must wait a specified period of time (the average repair time) before continuing. 4 - Refueling, ammunition transfer, and maintenance procedures are too dissimilar from real world
Establish observation posts	NO					1 - Cannot dismount onto terrain to establish/operate an OP.
Move into a hide position behind tank primary firing position	YES	NO	NO	NO	YES	2/3 - Crew cannot dismount to locate, adjust, verify cover/concealment/tank position. 3 - Due to terrain smoothing, hull/turret-down/hide positions are scarce and difficult to identify. 4 - Expected transfer is nil, inadequate cover and terrain.
Receive orientation on hide position and location of turret down	YES	YES	NO	NO	YES	3 - Positions cannot be marked for identification. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify and occupy. 3/4 - Must be done visually from inside CVS, since cannot walk on terrain.
Move into turret-down position	YES	NO	NO	NO	YES	2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull/turret-down. 3 - Crew cannot dismount to locate, adjust, verify cover/concealment/ tank position. 3 - Due to terrain smoothing, and inability to improve positions, hull/ turret-down positions are scarce and difficult to identify and occupy. 4 - Expected transfer is nil, inadequate cover and terrain.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
A. PREPARATION OF DELIBERATE BATTLE POSITION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Crews (continued)						
Scan sectors of fire	YES	NO	NO	YES	NO	2/3 - Thermal Imagery System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 5 - Not observable, can be inferred from targets detected.
Receive orientation of turret down position and location of hull down	YES	YES	NO	NO	YES	3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify and occupy. 3 - Positions cannot be marked for identification. 3/4 - Must be done visually from CVS, since cannot walk on terrain
(Loader) mark location of turret down position	NO					1 - Cannot mark positions for identification, cannot dismount or walk on terrain.
Move into hull down position	YES	NO	NO	NO	YES	2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull/turret-down. 3 - Crew cannot dismount to locate, adjust, verify cover/concealment/ tank position. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify and occupy. 4 - Expected transfer is nil, inadequate cover and terrain.
Receive orientation on hull down position	YES	YES	NO	NO	YES	3 - Positions cannot be marked for identification. 3/4 - Must be done visually from inside CVS, since cannot walk on terrain. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify and occupy.
Receive briefing on OPORD	YES	YES	YES	YES	YES	
(Loader) mark location of hull down position	NO					1 - Cannot mark positions for identification, cannot dismount on terrain.
(Gunner) makes two copies of sketch range card	YES	YES	NO	NO	YES	3/4 - Made easier by lack of terrain features and ability to use Grid-Azimuth-Indicator to determine exact location of terrain features present.
Back into hide position	YES	YES	NO	NO	YES	3 - With gun tube oriented over front of vehicle, cannot observe sectors to rear. 4 - Inadequate cover/concealment. 3 - Lack of cover/concealment makes identifying and occupying hide positions difficult.
(Loader) delivers copy of sketch range card to platoon leader's tank	YES	NO	NO	YES	YES	3 - There is no way to identify the SIMNET station that the platoon leader occupies. 2 - No actual tank exists.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
A. PREPARATION OF DELIBERATE BATTLE POSITION (continued)

Crews (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Move to alternate firing position	YES	NO	NO	NO	YES	2/3 - Lack of marked/improved positions, and distinguishing terrain features makes moving to exact position hard. 2/3 - No prepared routes or track marks to guide drivers to positions. 2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull/turret-down. 3 - Crew cannot dismount to locate, adjust, verify cover/concealment/ tank position. 3 - Due to terrain smoothing, and inability to improve positions, hull/ turret-down positions are scarce and difficult to identify and occupy. 4 - Expected transfer is nil, inadequate cover and terrain.
Conduct hasty occupation of alternate firing position	YES	NO	NO	NO	YES	2/3/4 - Preselected positions are difficult to identify and occupy, since positions cannot be improved or marked. 2/3/4 - Routes between positions cannot be improved or marked, no track marks to mark routes to positions; makes it difficult to move quickly between positions.
Upgrade sketch range card	YES	YES	NO	NO	YES	3/4 - Made easier by lack of terrain features and ability to use Grid-Azimuth-Indicator to determine exact location of terrain features present.
Mark alternate position	NO					1 - Cannot mark positions for identification, cannot dismount on terrain.
Move to supplementary firing position	YES	NO	NO	NO	YES	2/3 - Lack of marked/improved positions, and distinguishing terrain features makes moving to exact location of position hard. 2/3 - No prepared routes or track marks to guide drivers to positions. 2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull/turret-down. 3 - Crew cannot dismount to locate, adjust, verify cover/concealment/ tank position. 3 - Due to terrain smoothing, and inability to improve positions, hull/ turret-down positions are scarce and difficult to identify and occupy. 4 - Expected transfer is nil, inadequate cover and terrain.
Conduct hasty occupation of supplementary firing position	YES	NO	NO	NO	YES	2/3/4 - Preselected positions are difficult to identify and occupy, since positions cannot be improved or marked. 2/3/4 - Routes between positions cannot be improved or marked, no track marks to mark routes to positions; makes it difficult to move quickly between positions.
(Gunner) Make sketch range card for supplementary position	YES	YES	NO	NO	YES	3/4 - Made easier by lack of terrain features and ability to use Grid-Azimuth-Indicator to determine exact location of terrain features present
Mark supplementary position	NO					1 - Cannot mark positions for identification, cannot dismount on terrain.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
A. PREPARATION OF DELIBERATE BATTLE POSITION (continued)

Crews (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Move to hide position behind primary firing position	YES	NO	NO	NO	YES	2/3 - Crew cannot dismount to locate, adjust, verify cover/concealment/ tank position. 3 - Due to terrain smoothing, hull/turret-down/hide positions are scarce and difficult to identify. 4 - Expected transfer is nil, inadequate cover and terrain.
(Driver) Shut down engine simultaneously	YES	YES	YES	YES	YES	
Camouflage vehicle	NO					1 - Crew cannot dismount to camouflage vehicles.
Clear fields of fire	NO					1 - Cannot alter, improve terrain; crew cannot dismount onto terrain.
Establish a platoon hot loop	NO					1 - Crew cannot dismount onto terrain to establish wire communications.
Improve OP positions	NO					1 - Cannot alter, improve terrain; crew cannot dismount onto terrain.
Employ chemical agent alarms	NO					1 - Crew cannot dismount onto terrain to set up chemical alarms.
Employ PEWS to flanks and rear	NO					1 - PEWS not represented.
Organize the engagement area	NO					1 - Cannot install obstacles. Terrain cannot be altered, improved, or fortified in any manner. 1 - Cannot dismount or walk on terrain to verify tank positions
Conduct rehearsals for defensive mission	YES	NO	NO	NO	YES	2/3/4 - Routes between positions cannot be improved or marked, no track marks to mark routes to positions; makes it difficult to move quickly between positions.
Continue to improve positions	NO					1 - Cannot alter, improve terrain; crew cannot dismount onto terrain.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
B. EXECUTE A PLATOON DEFENSIVE MISSION

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader						
Receive SPOTREP from team leader	YES	YES	YES	YES	YES	
Write down and acknowledge SPOTREP	YES	YES	YES	YES	YES	
Analyze SPOTREP	YES	YES	YES	YES	NO	5 - Not observable.
Alert platoon and OP with SPOTREP	YES	NO	YES	YES	YES	2 - Crew cannot dismount onto terrain to establish/operate an OP.
Direct platoon to remain in hide position until OP detects enemy approaching	NO					1 - Crew cannot dismount or walk on terrain to establish/operate an OP.
OR						
Prepare platoon to engage:						
Order/signal platoon to start engines simultaneously	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to reliance on radio communication.
Order/signal platoon to move to turret-down position	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to reliance on radio communication.
Issue platoon fire command	YES	NO	NO	NO	YES	2/3/4 - Machine guns not represented; could lead to reliance on main gun engagements.
Send SPOTREP to team leader	YES	YES	NO	YES	YES	3 - Grid Azimuth Indicator, unique to device, can be used to determine cardinal direction or exact location in place of a compass. 3 - Difficult to identify vehicles by type. 3 - Display lacks cues (e.g., shadows) used in real world to determine cardinal direction
(Optional) If not performed by Team Leader) Request indirect fires on enemy vehicles	YES	NO	NO	NO	YES	2/3/4 - Exact location of a point on the ground can be determined using the Grid-Azimuth-Indicator, unique to device, in place of a compass.
(Optional)(If not performed by Team Leader) Request fire-for-effect mission on a preplotted target in the engagement area	YES	NO	NO	NO	YES	2/3/4 - Exact location of a point on the ground can be determined using the Grid-Azimuth-Indicator, unique to device, in place of a compass.
Determine optimum time to engage the enemy	YES	YES	NO	YES	NO	3 - Judging speed of other vehicles is difficult. 3 - Estimating distance/range is difficult. 5 - Not observable, infer from fire command.
Order platoon to move to hull down position and engage enemy	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position) B. EXECUTE A PLATOON DEFENSIVE MISSION (continued)	If NO, Provide Comment (1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader (continued)						
Coordinate movement to alternate position so only one vehicle per section moves at the same time	YES	YES	YES	YES	YES	
(OPTIONAL) Order shift to supplementary position	YES	YES	YES	YES	YES	
(OPTIONAL) Order return from supplementary to primary position	YES	YES	YES	YES	YES	
Issue additional platoon fire commands	YES	NO	NO	NO	YES	2/3/4 - Machine guns not represented; could lead to reliance on main gun engagements.
Control overkill and ammo expenditure	YES	NO	NO	NO	YES	2/3/4 - Machine guns not represented; could lead to reliance on main gun engagements.
Order platoon back into turret-down position	YES	YES	YES	YES	YES	
Receive action reports from TL	YES	YES	YES	YES	YES	
Send SPOTREP to Team Leader	YES	YES	NO	YES	YES	3 - Grid Azimuth Indicator, unique to device, can be used to determine cardinal direction or exact location in place of a compass. 3 - Difficult to identify vehicles by type. 3 - Display lacks cues (e.g., shadows) used in real world to determine cardinal direction.
(Optional)(If enemy reaches "break point") Submit SPOTREP to Team Leader	YES	YES	NO	YES	YES	3 - Grid Azimuth Indicator, unique to device, can be used to determine cardinal direction or exact location in place of a compass. 3 - Difficult to identify vehicles by type. 3 - Display lacks cues (e.g., shadows) used in real world to determine cardinal direction.
(Optional)(If enemy reaches "break point") Request permission to displace to subsequent battle position	YES	YES	YES	YES	YES	
(Optional)(If enemy reaches "break point") Request final protected indirect	YES	NO	NO	NO	YES	2/3/4 - Grid coordinates and cardinal direction can be determined using the Grid-Azimuth-Indicator, unique to device, in place of a compass.
(Optional)(If request to displace is refused) Receive direction to continue the mission	YES	YES	YES	YES	YES	
(Optional)(If request to displace is granted) Receive direction to displace	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
B. EXECUTE A PLATOON DEFENSIVE MISSION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader (continued)						
(Optional)(If enemy is destroyed and no follow on enemy is identified) Direct platoon to shut down engines to listen for advancing enemy	YES	YES	YES	YES	YES	
Platoon Sergeant						
Coordinate movement to alternate position so only one vehicle per section moves at the same time	YES	YES	YES	YES	YES	
(OPTIONAL) Coordinate movement to supplementary battle position	YES	YES	YES	YES	YES	
(OPTIONAL) Coordinate movement to subsequent battle	YES	YES	YES	YES	YES	
Tank Commanders						
Lay main gun on sector/target given	YES	YES	NO	YES	YES	3 - Turret/Gun-to-Hull Reference System Display, used to identify turret/gun tube orientation, is unique to device. 3 - TC/gunner/loader can become easily disoriented when gun tube is not pointed over front of vehicle.
Scan for targets	YES	NO	NO	YES	NO	2/3 - Thermal Imagery System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's HFOV limited to 60°, TC can rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 3/4 - OPFOR targets are easily identified since they are a different color than friendly vehicles. 5 - Not observable, can be inferred from targets detected.
Submit contact to platoon leader if enemy is detected	YES	YES	YES	YES	YES	
React to platoon fire command	YES	NO	NO	NO	YES	2/3/4 - Machine guns not represented; could lead to overreliance on main gun engagements.
Issue crew fire command	YES	NO	NO	NO	YES	2/3/4 - Machine guns not represented; could lead to reliance on main gun engagements.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
B. EXECUTE A PLATOON DEFENSIVE MISSION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Tank Commanders (continued)						
Report to platoon leader when ready to engage	YES	YES	YES	YES	YES	
						2/3 - Thermal Imagery System not represented. 2/3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's HFOV limited to 60°, TC can rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 3 - Difficult to identify vehicles by type. 3/4 - OPFOR targets are easily identified since they are a different color than friendly vehicles.
Scan for additional enemy elements	YES	NO	NO	NO	NO	5 - Not observable, can be inferred from targets detected.
Report actions to TL	YES	YES	YES	YES	YES	
React to break point occurrence	YES	YES	YES	YES	YES	
Crews						
(Driver) Start vehicle	YES	YES	YES	YES	YES	
						2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down. 3 - Due to terrain smoothing, hull/turret-down/hide positions are scarce and difficult to identify and occupy. 3 - Cannot mark or improve tank positions.
Move to turret-down position	YES	NO	NO	NO	YES	4 - Expected transfer is nil, inadequate cover and terrain.
						2/3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's HFOV limited to 60°, TC can rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 3 - Difficult to identify vehicles by type. 3/4 - OPFOR targets are easily identified since they are a different color than friendly vehicles.
(Gunner) Scan for targets	YES	NO	NO	YES	NO	5 - Not observable, can be inferred from targets detected.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
B. EXECUTE A PLATOON DEFENSIVE MISSION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Crews (continued)						
Move to hull-down position	YES	NO	NO	NO	YES	2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down. 3 - Cannot mark or improve tank positions. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify and occupy. 4 - Expected transfer is nil, inadequate cover and terrain.
Engage enemy targets	YES*	NO	NO	NO	YES	* For a more detailed assessment refer to the Evaluation of Gunnery Activities. 2/3 - No degraded mode gunnery. 3 - Array of targets represented is limited. 2/3 - Thermal Imaging System is not represented. 3/4 - OPFOR targets are easily identified since they are a different color than friendly vehicles. 2/3/4 - Machine guns not represented, could lead to overreliance on main gun engagements.
Move to alternate firing position	YES	NO	NO	NO	YES	2/3 - Lack of marked/improved positions, and distinguishing terrain features makes moving to exact positions difficult. 2/3 - No prepared routes or track marks to guide drivers to positions. 2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down. 3 - Cannot mark or improve tank positions. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify and occupy. 4 - Expected transfer is nil, due to lack of prepared positions and routes
(Optional) Move to hide position/reoccupy primary firing position	YES	NO	NO	NO	YES	2/3 - Lack of marked/improved positions, and distinguishing terrain features makes moving to exact positions difficult. 2/3 - No prepared routes or track marks to guide drivers to positions; difficult to move to exact position quickly. 2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down. 3 - Cannot mark or improve tank positions. 3 - Due to terrain smoothing, hull/turret-down/hide positions are scarce and difficult to identify and occupy. 4 - Expected transfer is nil, due to lack of prepared positions and routes

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position) B. EXECUTE A PLATOON DEFENSIVE MISSION (continued)	If NO, Provide Comment (1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Crews (continued)						
Move to supplementary position	YES	NO	NO	NO	YES	2/3 - Lack of marked/improved positions, and distinguishing terrain features makes moving to exact positions difficult. 2/3 - No prepared routes or track marks to guide drivers to positions; difficult to move to exact position quickly. 2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down. 3 - Cannot mark or improve tank positions. 3 - Due to terrain smoothing, hull/turret-down/hide positions are scarce and difficult to identify and occupy. 4 - Expected transfer is nil, due to lack of prepared positions and routes
(Optional) Move to subsequent battle position	YES	NO	NO	NO	YES	2/3 - Lack of marked/improved positions, and distinguishing terrain features makes moving to exact positions difficult. 2/3 - No prepared routes or track marks to guide drivers to positions; difficult to move to exact position quickly. 2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down. 3 - Cannot mark or improve tank positions. 3 - Due to terrain smoothing, hull/turret-down/hide positions are scarce and difficult to identify and occupy. 4 - Expected transfer is nil, due to lack of prepared positions and routes
Move back to turret-down position	YES	NO	NO	NO	YES	2/3 - Lack of marked/improved positions, and distinguishing terrain features makes moving to exact positions difficult. 2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down. 3 - Cannot mark or improve tank positions. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify and occupy. 4 - Expected transfer is nil, inadequate cover and terrain.
Conduct consolidation and reorganization activities	YES*					* - See performance element ratings listed under Special Missions, Consolidation and Reorganization, Crews

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
C. HASTY OCCUPATION OF A BATTLE POSITION

Platoon Leader	If NO, Provide Comment (1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Receive FRAGO from TL	YES	YES	YES	YES	YES	
Prepare/Issue FRAGO to platoon	YES	YES	YES	YES	NO	5 - Preparation of FRAGO is not observable.
						3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues.
						3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation.
						3 - Lack of open hatch makes observing tanks in formation difficult.
Lead platoon movement towards rear of flanks of assigned BP	YES	NO	NO	NO	YES	2/3/4 - Device does not allow hand and arm signals to be issued, could lead to overreliance on radio communication.
						3/4 - Orienting a map using a compass, requires the use of the Grid-Azimuth-Indicator, unique to device. TCs may become reliant on Grid-Azimuth-Indicator.
						3/4 - Orienting a map by map-terrain association is difficult since the SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain features or vegetation that can be used as reference points.
						3 - Recon must be conducted from within CVS and is therefore hindered by lack of open hatch mode, inability to walk terrain, vision blocks restricted HFOV, and inability to utilize visual equipment.
(As platoon approaches assigned BP) Identify:	YES	YES	NO	NO	NO	5 - Not observable.
						3/4 - Given exact coordinates of BP boundaries can be easily identified using Grid-Azimuth-Indicator; could lead to overreliance on Grid-Azimuth Indicator.
						3/4 - Difficult to identify points on the ground from a map by map-terrain association due to a lack of terrain features, expected transfer is nil.
- Limits of BP	YES	YES	NO	NO	NO	5 - Not observable.
						3/4 - Given exact coordinates, can be easily identified using Grid-Azimuth-Indicator; could lead to overreliance on Grid-Azimuth-Indicator.
						3/4 - Difficult to identify points on the ground from a map by map-terrain association due to a lack of terrain features, expected transfer is nil.
- Possible locations for primary firing positions	YES	YES	NO	NO	NO	5 - Not observable.
						3 - SIMNET terrain and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify continuous terrain that proves cover/concealment to support movement.
- Covered/concealed routes in and out of BP to subsequent BPs	YES	YES	NO	NO	NO	4 - Expected transfer is nil; inadequate cover/concealment.
						5 - Not observable.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
C. HASTY OCCUPATION OF A BATTLE POSITION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader (continued)						
Direct hasty occupation of BP:						
- Order platoon movement into line formation behind the BP	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to reliance on radio communication.
- Designate general location of primary firing position for each vehicle	YES	NO	NO	NO	YES	2/3 - Must be done by map or from within CVS by giving terrain reference points and/or grid coordinates, since cannot dismount to recon terrain with TCs. 4 - Few distinctive terrain features and vegetation that may be used as terrain reference points.
- Order platoon to occupy turret-down positions	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to reliance on radio communication.
Designates to TCs:						
- TRPs and/or EA	YES	NO	NO	NO	YES	2/3 - Must be done by map or from within CVS by giving terrain reference points and/or grid coordinates, since cannot dismount to recon terrain with TCs. 4 - Few distinctive terrain features and vegetation that may be used as terrain reference points.
- Primary firing positions and sectors of fire	YES	NO	NO	NO	YES	2/3 - Must be done by map or from within CVS by giving terrain reference points and/or grid coordinates, since cannot dismount to recon terrain with TCs. 4 - Few distinctive terrain features and vegetation that may be used as terrain reference points.
- Supplementary firing positions and sectors of fire	YES	NO	NO	NO	YES	2/3 - Must be done by map or from within CVS by giving terrain reference points and/or grid coordinates, since cannot dismount to recon terrain with TCs. 4 - Few distinctive terrain features and vegetation that may be used as terrain reference points.
- Covered/concealed routes in and out of BP to subsequent BPs	YES	NO	NO	NO	YES	2/3 - Must be done by map or from within CVS by giving terrain reference points and/or grid coordinates, since cannot dismount to recon terrain with TCs. 4 - Few distinctive terrain features and vegetation that may be used as terrain reference points.
Order platoon to occupy hull-down positions	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to reliance on radio communication.
Report occupation of BP to TL	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position) C. HASTY OCCUPATION OF A BATTLE POSITION (continued)	If NO, Provide Comment (1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader (continued)						
(Optional--If OPFOR threat is reduced to "possible"):						
- Order platoon back into hull-down positions	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to reliance on radio communication.
- Direct platoon to shut down engines simultaneously	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to reliance on radio communication.
(Optional--If METT-T allows) Issue FRAGO to platoon to upgrade the BP	YES	YES	YES	YES	YES	
Order platoon back into turret-down position (if not already occupied)	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to reliance on radio communication.
Conduct a ground recon of BP (if it was not done prior to hasty occupation)	YES	YES	NO	NO	NO	3/4 - Orienting a map using a compass, requires the use of the Grid-Azimuth-Indicator, unique to device. TCs may become reliant on Grid-Azimuth-Indicator. 3/4 - Orienting a map by map-terrain association is difficult since the SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain features or vegetation that can be used as reference points. 3 - Ground recon hindered by lack of open hatch mode, inability to walk terrain, vision blocks restricted HFOV, and inability to utilize visual equipment. 5 - Not observable.
Issue OPORD to platoon that includes:						
- Company BP, TRPs, and EA	YES	NO	NO	NO	YES	2/3 - Must be done by map or from within CVS by giving terrain reference points and/or grid coordinates, since cannot dismount to point out control measures to TCs. 4 - Few distinctive terrain features and vegetation that may be used as terrain reference points.
- Limits of platoons BP and sector of fire	YES	NO	NO	NO	YES	2/3 - Must be done by map or from within CVS by giving terrain reference points and/or grid coordinates, since cannot dismount to point out control measures to TCs. 4 - Few distinctive terrain features and vegetation that may be used as terrain reference points.
- Location of artillery preplots	YES	NO	NO	NO	YES	2/3 - Must be done by map or from within CVS by giving terrain reference points and/or grid coordinates, since cannot dismount to point out control measures to TCs. 4 - Few distinctive terrain features and vegetation that may be used as terrain reference points.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
C. HASTY OCCUPATION OF A BATTLE POSITION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader (continued)						
- Primary and supplementary firing positions and sectors of fire	YES	NO	NO	NO	YES	2/3 - Must be done by map or from within CVS by giving terrain reference points and/or grid coordinates, since cannot dismount to point out tank positions to TCs. 4 - Few distinctive terrain features and vegetation that may be used as terrain reference points.
- Location of OPs	NO					1 - Crews cannot dismount or walk on terrain to establish OPs.
- Locations of existing obstacles and positions for reinforcing obstacles	YES	NO	NO	NO	NO	2/3/4 - SIMNET terrain data base and corresponding terrain maps contain few obstacles (buildings, rivers); reinforced obstacles and mines are not represented. 5 - Not observable, can be measured by knowledge test.
- Covered/concealed routes between primary and supplementary firing positions	YES	NO	NO	NO	YES	2/3 - Must be done by map or from within CVS by giving terrain reference points and/or grid coordinates, since cannot dismount to point out routes to TCs. 4 - Few distinctive terrain features and vegetation that may be used as terrain reference points.
- Covered/concealed routes in and out of the primary BP to subsequent BPs	YES	NO	NO	NO	YES	2/3 - Must be done by map or from within CVS by giving terrain reference points and/or grid coordinates, since cannot dismount to point out routes to TCs. 4 - Few distinctive terrain features and vegetation that may be used as terrain reference points.
Direct platoon to start engines simultaneously	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to reliance on radio communication.
Order platoon to occupy hull-down positions	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to reliance on radio communication.
Direct platoon to shut down engines simultaneously	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to reliance on radio communication.
Report to TL that BP has been established	YES	YES	YES	YES	YES	
Consolidate sketch range cards	YES	YES	NO	YES	YES	3 - Lack of distinguishing terrain reference points makes identifying control measures on the ground and ensuring that tank sectors overlap more difficult. 3 - Lack of terrain features and terrain smoothing allows for virtually unrestricted fields of fire.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
C. HASTY OCCUPATION OF A BATTLE POSITION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader (continued)						
Prepares platoon fire plan	YES	YES	NO	YES	YES	3 - Lack of distinguishing terrain reference points makes identifying control measures on the ground and ensuring that tank sectors overlap more difficult. 3 - Lack of terrain features and terrain smoothing allows for virtually unrestricted fields of fire.
Platoon Sergeant						
Direct positioning of tanks in primary positions	YES	YES	NO	NO	YES	3 - Positioning tanks is difficult since cover/concealment is sparse and difficult to exploit. 3 - There are few distinguishing terrain features to use when adjusting sectors, positions; Grid-Azimuth-Indicator may be used to give exact location of sectors, positions. 3 - Cannot walk terrain to point out sectors or direct positioning of tanks to TCs. 4 - Expected transfer is nil, manner in which task must be performed is too dissimilar to real world.
Direct establishment of OP	NO					1 - Crew cannot dismount on terrain to establish/operate an OP.
Tank Commanders						
Select alternate firing positions	YES	YES	NO	NO	NO	3 - If done by surveying terrain, hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify terrain providing adequate cover/concealment; and allowing for virtually unobstructed observation/fire. 4 - Expected transfer is nil. 5 - Not observable, can be measured by knowledge test.
Select covered/concealed routes between primary, alternate, and supplementary firing positions	YES	YES	NO	NO	NO	3 - If done by surveying terrain, hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making it difficult to identify continuous terrain that provides adequate cover/concealment. 4 - Expected transfer is nil; inadequate cover/concealment. 5 - Not observable, can be measured by knowledge test.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
C. HASTY OCCUPATION OF A BATTLE POSITION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Tank Commanders (continued)						
Signals PL when ready	YES	YES	YES	YES	YES	
Orient sectors of fire	YES	YES	NO	YES	NO	3 - Hindered by lack of open hatch mode, inability to walk terrain, vision blocks restricted HFOV, and inability to utilize visual equipment; must be done from within CVS or by map. 3 - Lack of distinguishing terrain reference points makes ensuring that sectors overlap difficult. 5 - Not observable.
Identify alternate firing positions	YES	YES	NO	NO	NO	3 - Hindered by lack of open hatch mode, vision blocks restricted HFOV, and inability to utilize visual equipment. 3 - Orienting a map using a compass, require the use of the Grid-Azimuth-Indicator, which is unique to the device. 3 - Orienting a map by map-terrain association is difficult since the SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain features or vegetation that can be used as reference points. 3 - Positions cannot be marked for identification. 4 - TCs may learn to rely on Grid-Azimuth indicator, not present on real vehicle. Inadequate terrain reference points. 5 - Not observable.
Identify routes in and out of firing positions	YES	YES	NO	NO	NO	3 - Hindered by lack of open hatch mode, vision blocks restricted HFOV, and inability to utilize visual equipment. 3 - Orienting a map using a compass, require the use of the Grid-Azimuth-Indicator, which is unique to the device. 3 - Orienting a map by map-terrain association is difficult since the SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain features or vegetation that can be used as reference points. 3 - Routes cannot be marked for identification. 4 - TCs may learn to rely on Grid-Azimuth indicator, not present on real vehicle. Inadequate terrain reference points. 5 - Not observable.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
C. HASTY OCCUPATION OF A BATTLE POSITION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Tank Commanders (continued)						
Identify location of hide positions	YES	YES	NO	NO	NO	3 - Hindered by lack of open hatch mode, vision blocks restricted HFOV, and inability to utilize visual equipment. 3 - Orienting a map using a compass, require the use of the Grid-Azimuth-Indicator, which is unique to the device. 3 - Orienting a map by map-terrain association is difficult since the SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain features or vegetation that can be used as reference points. 3 - Positions cannot be marked for identification. 4 - TCs may learn to rely on Grid-Azimuth indicator, not present on real vehicle. Inadequate terrain reference points. 5 - Not observable.
Orient crews to hull-down positions	YES	NO	NO	NO	YES	3 - Positions cannot be marked for identification. 2/3/4 - Must be done by giving out terrain reference points and/or grid coordinates, since cannot dismount to recon terrain with crew. 4 - Few distinctive terrain features and vegetation that may be used as reference points.
Brief crews on OPORD/FRAGO	YES	YES	YES	YES	YES	
Direct Loader to deliver sketch range card to PL	YES	YES	YES	YES	YES	
Crews						
Move to rear or flanks of assigned BP	YES	YES	NO	NO	YES	3 - Vehicles maneuver easier/faster than in real world due to terrain smoothing and absence of physical movement cues. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3/4 - Estimating distance between objects is difficult; may develop unsafe habit of lasing to tanks to determine interval. 3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed. 3 - Driver's HFOV is 60^{0}, compared to 170^{0} in M1, making it difficult to monitor position of other vehicles in formation.
Execute line formation	YES*					* - See performance element rating listed under Movement Formations.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
C. HASTY OCCUPATION OF A BATTLE POSITION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Crews (continued)						
						2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is turret-/hull-down. 3 - Crew cannot dismount to locate, adjust, verify cover/concealment/tank position. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify. 3 - Reduced field of vision makes monitoring movement of other tanks and moving in unison difficult.
Move simultaneously into turret-down positions	YES	NO	NO	NO	YES	4 - Expected transfer is nil, inadequate cover and terrain.
						3 - Repositioning is difficult, since cover/concealment is sparse and hard to exploit.
Adjust position as needed to occupy primary position	YES	NO	NO	NO	YES	2/3/4 - Crew cannot dismount to direct positioning of the vehicle.
						2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is turret-/hull-down. 3 - Crew cannot dismount to locate, adjust, verify cover/concealment/tan position. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify. 3 - Reduced field of vision makes monitoring movement of other tanks and moving in unison difficult.
Move simultaneously into hull-down positions	YES	NO	NO	NO	YES	4 - Expected transfer is nil, inadequate cover and terrain.
						2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is turret-/hull-down. 3 - Crew cannot dismount to locate, adjust, verify cover/concealment/tan position. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify. 3 - Reduced field of vision makes monitoring movement of other tanks and moving in unison difficult.
Move simultaneously into turret-down positions	YES	NO	NO	NO	YES	4 - Expected transfer is nil, inadequate cover and terrain.
(Drivers) Shut down engines simultaneously	YES	NO	NO	YES	YES	2/3 - Cannot receive hand and arm signals, could lead to overreliance on radio communication.
						2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is turret-/hull-down. 3 - Crew cannot dismount to locate, adjust, verify cover/concealment/tan position. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify. 3 - Reduced field of vision makes monitoring movement of other tanks and moving in unison difficult.
Move simultaneously into turret down positions (if not already there)	YES	NO	NO	NO	YES	4 - Expected transfer is nil, inadequate cover and terrain.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position) C. HASTY OCCUPATION OF A BATTLE POSITION (continued)	If NO, Provide Comment (1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Crews (continued)						
(Drivers) Shut down engines simultaneously	YES	NO	NO	YES	YES	2/3 - Cannot receive hand and arm signals, could lead to overreliance on radio communication.
Observe sectors of fire and EA	YES	NO	NO	YES	NO	2/3 - Thermal Imagery System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 5 - Not observable, can be inferred from targets detected.
(Loader) Mark turret-down position	NO					1 - Cannot mark positions for identification, cannot dismount on terrain.
Maintain all-around security	YES	NO	NO	YES	NO	2/3 - Thermal Imagery System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle. 5 - Not observable, can be inferred from targets detected.
Establish/Operate OP	NO					1 - Cannot dismount or walk on terrain to establish/operate an OP.
(Drivers) Start engines simultaneously	YES	NO	NO	YES	YES	2/3 - Cannot receive hand and arm signals, could lead to overreliance on radio communication.
Move simultaneously into hull-down positions	YES	NO	NO	NO	YES	2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is turret-/hull-down. 3 - Crew cannot dismount to locate, adjust, verify cover/concealment/tan position. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify. 3 - Reduced field of vision makes monitoring movement of other tanks and moving in unison difficult. 4 - Expected transfer is nil, inadequate cover and terrain.
(Drivers) Shut down engines simultaneously	YES	NO	NO	YES	YES	2/3 - Cannot receive hand and arm signals, could lead to overreliance on radio communication.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION II. DEFENSE (Battle Position)
C. HASTY OCCUPATION OF A BATTLE POSITION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Crews (continued)						
Receive orientation to hull-down position	YES	YES	NO	NO	YES	3 - Positions cannot be marked for identification. 3/4 - Must be done by giving out terrain reference points and/or grid coordinates, since cannot dismount to recon terrain. 4 - Few distinctive terrain features and vegetation that may be used as reference points.
Receive briefing on OPORD/FRAGO	YES	YES	YES	YES	YES	
(Loader) Mark hull-down position	NO					1 - Cannot mark positions for identification, cannot dismount on terrain.
(Gunner) Make two copies of sketch range card of primary position	YES	YES	NO	NO	YES	3/4 - Made easier by the lack of terrain features and ability to use Grid-Azimuth-Indicator to determine exact location of terrain features present. 2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is turret-/hull-down. 3 - Crew cannot dismount to locate, adjust, verify cover/concealment/tan position. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify. 3 - Reduced field of vision makes monitoring movement of other tanks and moving in unison difficult.
Move back into hide positions individually after range cards are completed	YES	NO	NO	NO	YES	4 - Expected transfer is nil, inadequate cover and terrain.
(Loader) Deliver sketch range card to PL	YES	YES	YES	YES	YES	
(Drivers) Shut-down engines simultaneously	YES	NO	NO	YES	YES	2/3 - Cannot receive hand and arm signals, could lead to overreliance on radio communication.
Continue to improve the BP	NO					1 - Cannot alter, improve terrain; crew cannot dismount onto terrain.

Appendix D

An Analysis of the Simulation of Tank Platoon Special Operations on SIMNET

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS
A. ROAD MARCH

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader						
Receive/Analyze Company/Team OPORD	YES	YES	YES	YES	NO	5 - Cannot observe analysis of OPORD.
Issue platoon warning order	YES	YES	YES	YES	YES	
Formulate tentative plan for platoon's mission/ Backwards plan time	YES	YES	YES	YES	NO	5 - Not observable. 3/4 - Orienting a map using a compass, requires the use of the Grid-Azimuth-Indicator, unique to device. TCs may become reliant on Grid-Azimuth-Indicator. 3/4 - Orienting a map by map-terrain association is difficult since the SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain features or vegetation that can be used as reference points. 3 - Ground recon must be conducted from within CVS and is therefore hindered by lack of open hatch mode, inability to walk terrain, vision blocks restricted HFOV, and inability to utilize visual equipment.
Conduct map/ground recon:	YES	YES	NO	NO	NO	5 - Not observable. 3/4 - Difficult to identify points on a map on the ground by map-terrain association due to lack of terrain reference points. Expected transfer is nil. 3/4 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator; could lead to reliance on Grid-Azimuth-Indicator.
- Identify start point (SP)	YES	YES	NO	NO	NO	5 - Not observable. 3/4 - Difficult to identify points on a map on the ground by map-terrain association due to lack of terrain reference points. Expected transfer is nil. 3/4 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator; could lead to reliance on Grid-Azimuth-Indicator.
- Identify critical points	YES	YES	NO	NO	NO	5 - Not observable. 3/4 - Difficult to identify points on a map on the ground by map-terrain association due to lack of terrain reference points. Expected transfer is nil. 3/4 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator.
- Identify RP	YES	YES	NO	NO	NO	5 - Not observable. 3/4 - Difficult to identify points on a map on the ground by map-terrain association due to lack of terrain reference points. Expected transfer is nil. 3/4 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator.
Identify halt areas along route	YES	YES	NO	NO	NO	5 - Not observable.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS A. ROAD MARCH (continued)	If NO, Provide Comment (1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader (continued)						
Prepare platoon OPORD	YES	YES	YES	YES	NO	5 - Not observable.
Issue platoon OPORD	YES	YES	YES	YES	YES	
Control platoon movement along route	YES	NO	NO	NO	YES	2 - Device does not allow for hand and arm signals to be issued. 3 - Judging speed of vehicle/other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 4 - Inability to use hand and arm signals could lead to reliance on radio communication.
Report control measures as crossed	YES	YES	NO	NO	YES	3 - Orienting a map by map-terrain association is difficult since the SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain reference points. 3 - Orienting a map using a compass, requires the use of the Grid-Azimuth-Indicator, which is unique to the device. 4 - TCs may learn to rely on Grid-Azimuth-Indicator, not present on real vehicle, inadequate terrain reference points.
Supervise actions at halt areas	YES	NO	NO	NO	YES	2/3 - Cannot dismount to establish/operate OP. 2/3 - Method of refueling vehicles is unique to device. 2/3 - Method of ammunition transfer/resupply is unique to device. 2/3 - Sensory cues used to diagnose faults are limited. 2/3 - Cannot perform PMCS. 2/3 - Limited number of faults that can be diagnosed through SIMNET troubleshooting index. 2/3 - For some operational faults (i.e., thrown/broken tracks, vision blocks, and radio/intercoms) the crew must wait a specified period of time (the average repair time) before continuing. 4 - Refueling, ammunition transfer, and maintenance are too dissimilar from real world, expected transfer is nil.
(Optional) Perform linkup with guides at RP and CPs	YES	NO	NO	NO	YES	2/3/4 - Cannot exchange recognition signals, must use password which could lead to overreliance on radio communications.
(Optional) Report disabled vehicle to ISG	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS A. ROAD MARCH (continued)	If NO, Provide Comment (1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Sergeant						
Supervise refueling, maintenance, feeding, and police at halt areas	YES	NO	NO	NO	YES	2/3 - Cannot dismount to establish/operate OP. 2/3 - Method of refueling vehicles is unique to device. 2/3 - Method of ammunition transfer/resupply is unique to device. 2/3 - Sensory cues used to diagnose faults are limited. 2/3 - Cannot perform PMCS. 2/3 - Limited number of faults that can be diagnosed through SIMNET troubleshooting index. 2/3 - For some operational faults (i.e., thrown/broken tracks, vision blocks, and radio/intercoms) the crew must wait a specified period of time (the average repair time) before continuing. 4 - Refueling, ammunition transfer, and maintenance procedures are too dissimilar from real world.
Tank Commanders						
Communicate using visual signals/Maintain radio silence (if directed)	NO					1 - Device does not allow for hand and arm signals to be issued.
Monitor/Control tank movement/position in formation	YES	YES	NO	YES	YES	3 - Judging speed of vehicle/other vehicles is difficult. 3 - Estimating distance between objects is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed view of tanks in formation.
Crews						
Perform proper movement technique/formation	YES*					* - See performance element ratings listed under Movement Formations (Wedge, Line, Column, Vee, Echelon).
Maintain designated march speed and catch up speed	YES	YES	NO	YES	YES	3 - Visual, auditory, and physical cues for speed/movement can be confusing. 3 - Position of speedometer makes it difficult for driver to monitor speed
Maintain designated march order	YES	YES	NO	YES	YES	3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Judging speed of other vehicles is difficult.
Maintain designated march interval	YES	YES	NO	NO	YES	3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3/4 - Estimating distance between objects is difficult; could develop unsafe habit of lasing to other tanks to determine interval.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS A. ROAD MARCH (continued) Crews (continued)	If NO, Provide Comment (1) Perform/ Practice?	(2) All Com-ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Follow designated route of march	YES	YES	YES	YES	YES	2/3 - Thermal Imagery System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode; TC's and loader's view limited to 300°, TC must rotate cupola with modified CWS power control. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Lack of terrain features and vegetation provides vehicles with a virtually unobstructed view of tanks in formation. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle.
Maintain all-around movement security	YES	NO	NO	YES	NO	5 - Not observable.
Arrive at and clear the Start Point (SP), Release Points (RP), Critical Points (CPs) at the designated times	YES	YES	NO	YES	YES	3 - Orienting a map by map-terrain association is difficult since the SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain features or vegetation that can be used as reference points. 3 - Orienting a map using a compass, requires the use of the Grid-Azimuth-Indicator, which is unique to the device. 3 - Visual, auditory, and physical cues for speed/movement can be confusing, difficult to estimate rate of march.
Perform actions at a halt area IAW march order/SOP	YES	NO	NO	NO	YES	2/3 - Cannot dismount to establish/operate OP. 2/3 - Method of refueling vehicles is unique to device. 2/3 - Method of ammunition transfer/resupply is unique to device. 2/3 - Sensory cues used to diagnose faults are limited. 2/3 - Cannot perform PMCS. 2/3 - Limited number of faults that can be diagnosed through SIMNET troubleshooting index. 2/3 - For some operational faults (i.e., thrown/broken tracks, vision blocks, and radio/intercoms) the crew must wait a specified period of time (the average repair time) before continuing. 4 - Refueling, ammunition transfer, and maintenance procedures are too dissimilar from real world
Clear halt areas at designated times	YES	YES	YES	YES	YES	
Move through RP, CPs; (Optional) following ground guides	YES	NO	NO	NO	YES	2/3/4 - Cannot make use of ground guides, since cannot dismount or walk on terrain. 3/4 - No prepared routes or track marks to guide drivers along route.
(Optional) React to obstacles	YES	NO	NO	NO	YES	2/3/4 - SIMNET terrain data base and corresponding terrain maps contain few obstacles (buildings, rivers); reinforced obstacles are not represented. 3/4 - Obstacles have little effect on movement (e.g., vehicles are able to drive through tree lines).
(Optional) If disabled, clear roadway and direct traffic IAW SOP	YES	NO	NO	NO	YES	2/3/4 - Cannot dismount or walk on terrain to direct traffic.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS
B. OCCUPATION OF ASSEMBLY AREA

Platoon Leader	If NO, Provide Comment (1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Brief quartering personnel:						
- Designate location and time of linkup with company/team quartering party	YES	YES	YES	YES	YES	
- Designate location of company AA and platoon's sector within AA	YES	YES	YES	YES	YES	
- Specify order of march for company/platoon	YES	YES	YES	YES	YES	
- Specify time of platoon arrival at SP and RP	YES	YES	YES	YES	YES	
- Designate MOPP level and NBC conditions	YES	NO	NO	YES	YES	2/3 - NBC conditions not simulated.
Linkup with quartering party at RP	YES	NO	NO	NO	YES	2/3/4 - Cannot exchange recognition signals, must use password which could lead to overreliance on radio communications.
Report to TL when platoon is set	YES	YES	YES	YES	YES	
Receive briefing from quartering party on organization of AA	YES	YES	YES	YES	YES	
Prepare platoon fire plan and submit to Command Post	YES	YES	NO	YES	YES	3 - Hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - Few terrain reference point to utilize when consolidating range cards. 3 - OPs cannot be established.
Prepare obstacle plan with PSG	NO					1 - Terrain cannot be altered, improved, or fortified in any manner.
Establish security requirements and procedure IAW SOP	YES	NO	NO	YES	YES	2/3 - Cannot establish/operate OP/LP.
Establish REDCON level for platoon	YES	YES	YES	YES	YES	
Prepare for tactical operations	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS
B. OCCUPATION OF ASSEMBLY AREA
(continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader (continued)						
						2/3 - Cannot dismount to establish/operate OP. 2/3 - Method of refueling vehicles is unique to device. 2/3 - Method of ammunition transfer/resupply is unique to device. 2/3 - Sensory cues used to diagnose faults are limited. 2/3 - Cannot perform PMCS. 2/3 - Limited number of faults that can be diagnosed through SIMNET troubleshooting index. 2/3 - For some operational faults (i.e., thrown/broken tracks, vision blocks, and radio/intercoms) the crew must wait a specified period of time (the average repair time) before continuing. 4 - Refueling, ammunition transfer, and maintenance procedures are too dissimilar from real world.
Supervise platoon assembly area (AA) activities	YES	NO	NO	NO	YES	
Inspect local security	YES	NO	NO	NO	YES	2/3/4 - Cannot establish/operate OP/LP. 2/3/4 - Cannot dismount to direct tanks into positions, must be done by observing from within the CVS as tanks occupy positions and giving directions over the radio; expected transfer is nil, could lead to overreliance on radio.
Direct tanks/OPs to reposition (if needed)	YES	NO	NO	NO	YES	2/3/4 - Cannot establish/operate OP/LP.
Platoon Sergeant						
Designate personnel for quartering party	YES	YES	YES	YES	YES	
(Optional) Brief quartering personnel:						
- (Optional) Designate location and time of linkup with company/team quartering party	YES	YES	YES	YES	YES	
- (Optional) Designate location of company AA and platoon's sector within AA	YES	YES	YES	YES	YES	
- (Optional) Specify order of march for company/platoon	YES	YES	YES	YES	YES	
- (Optional) Specify time of platoon arrival at SP and RP	YES	YES	YES	YES	YES	
- (Optional) Designate MOPP level and NBC conditions	YES	NO	NO	YES	YES	2/3 - NBC conditions not simulated.
Receive briefing from quartering party on organization of AA	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS
B. OCCUPATION OF ASSEMBLY AREA
(continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Sergeant (continued)						
Assist PL in preparing obstacle plan	NO					1 - Terrain cannot be altered, improved, or fortified in any manner.
Obtain SITREPs from TCs	YES	YES	YES	YES	YES	
Report platoon status to Company/Team Command Post	YES	YES	YES	YES	YES	
Coordinate platoon maintenance and resupply requirements	YES	YES	YES	YES	YES	
Supervise platoon resupply, maintenance, rest, feeding, security and personnel care	YES	NO	NO	NO	YES	2/3 - Cannot dismount to establish/operate OP. 2/3 - Method of refueling vehicles is unique to device. 2/3 - Method of ammunition transfer/resupply is unique to device. 2/3 - Sensory cues used to diagnose faults are limited. 2/3 - Cannot perform PMCS. 2/3 - Limited number of faults that can be diagnosed through SIMNET troubleshooting index. 2/3 - For some operational faults (i.e., thrown/broken tracks, vision blocks, and radio/intercoms) the crew must wait a specified period of time (the average repair time) before continuing. 4 - Refueling, ammunition transfer, and maintenance procedures are too dissimilar from real world
Inspect local security	YES	NO	NO	NO	YES	2/3/4 - Cannot establish/operate OP/LP. 3 - Cover/concealment is difficult to exploit due to terrain smoothing and sparse vegetation. 2/3/4 - Cannot dismount to direct tanks into positions, must be done by observing from within the CVS as tanks occupy positions and giving directions over the radio; expected transfer is nil, could lead to overreliance on radio.
Direct tanks/OPs to reposition (if needed)	YES	NO	NO	NO	YES	2/3/4 - Cannot establish/operate OP/LP.
Tank Commanders						
Identify tank positions, routes into and out of AA	YES	YES	NO	NO	NO	3 - Hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - Difficult to identify positions on map on ground due to lack of terrain reference points. 4 - Expected transfer is nil. 5 - Not observable.
Coordinate with adjacent tanks	YES	YES	YES	YES	YES	3 - Lack of terrain features makes ensuring that sectors overlap difficult. 3 - Sector boundaries can be identified using Grid-Azimuth-Indicator. 3 - Lack of terrain features allow for virtually unrestricted fields of observation.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS
B. OCCUPATION OF ASSEMBLY AREA (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Tank Commanders (continued)						
Prepare sketch range card of sector	YES	YES	NO	YES	YES	3 - Made easier by the lack of distinguishing terrain and the use of Grid-Azimuth-Indicator.
Designate personnel occupy OP	NO					5 - Cannot establish/operate an OP.
Post OPs	NO					5 - Cannot establish/operate an OP.
Report vehicle, personnel, equipment status to PSG	YES	YES	YES	YES	YES	
Crews						
Arrive at RP on time	YES	YES	NO	YES	YES	3 - Orienting a map by map-terrain association is difficult since the SIMNET terrain data base and corresponding terrain maps contain a few distinguishing terrain features or vegetation that can be used as reference points. 3 - Orienting a map using a compass, requires the use of the Grid-Azimuth Indicator, which is unique to the device. 3 - Visual, auditory, and physical cues for speed/movement can be confusing; difficult to estimate rate of march.
Move off route of march without stopping or blocking traffic	YES	YES	NO	YES	YES	3 - Lack of terrain features and obstacles permits vehicles to maneuver on almost any point on terrain data base.
Move to platoon sector within AA (following guides as needed)	YES	NO	NO	NO	YES	2/3/4 - Cannot make use of ground guides; cannot walk on terrain. 3/4 - No prepared/marked routes or track marks to guide drivers along route.
Move into marked vehicle positions	NO					1 - Positions cannot be marked for identification.
Establish defensive tank position/Occupy hull down position	YES	NO	NO	NO	YES	2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down. 3 - Crew cannot dismount to locate, adjust, verify cover/concealment/tank position. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify to occupy. 4 - Expected transfer is nil, inadequate cover and terrain.
Orient gun tubes to provide 360° security	YES	YES	NO	YES	YES	3 - Turret/Gun-to-Hull Reference System Display, used to identify turret/gun tube orientation, is unique to device. 3 - TC/gunner/loader can become easily disoriented when gun tube is not pointed over front of vehicle.
Shut down engines simultaneously	YES	YES	YES	YES	YES	
Establish local security/OPs	YES	NO	NO	NO	YES	2/3/4 - Cannot establish/operate OP/LP.
Adhere to security/watch requirements	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS
J. OCCUPATION OF ASSEMBLY AREA
(continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Crews (continued)						
Establish wire communications between tanks/OP, OP/PL, PL/Command Post	NO					1 - Simulation does not permit installation of wire communications.
Camouflage tank positions	NO					1 - Terrain cannot be altered, improved, or fortified in any manner. cannot dismount.
Perform PMCS	NO					1 - Cannot perform PMCS.
Conduct maintenance and resupply	YES	NO	NO	NO	YES	2/3 - Cannot dismount to establish/operate OP. 2/3 - Method of refueling vehicles is unique to device. 2/3 - Method of ammunition transfer/resupply is unique to device. 2/3 - Sensory cues used to diagnose faults are limited. 2/3 - Cannot perform PMCS. 2/3 - Limited number of faults that can be diagnosed through SIMNET troubleshooting index. 2/3 - For some operational faults (i.e., thrown/broken tracks, vision blocks, and radio/intercoms) the crew must wait a specified period of time (the average repair time) before continuing. 4 - Refueling, ammunition transfer, and maintenance procedures are too dissimilar from real world.
Install NBC alarms/Follow NBC requirements with regards to MOPP, monitoring	NO					1 - NBC conditions not simulated. simulation does not allow for NBC monitoring.
Emplace obstacles/mines (if used)	NO					1 - Simulation does not allow for fortification of terrain.
Quartering Party Personnel						
Receive briefing from PL/PSG:						
- Identify location and time of linkup with company/team quartering party	YES	YES	NO	NO	NO	3/4 - Can locate exact points on terrain using Grid-Azimuth-Indicator, could lead to overreliance on Grid-Azimuth-Indicator. 3 - Hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks blocks restricted HFOV. 3/4 - Difficult to identify points on a map on the ground due to lack of reference points. 5 - Not observable.
- Identify location of company AA and platoon's sector within AA	YES	YES	NO	NO	NO	3/4 - Can locate exact points on terrain using Grid-Azimuth-Indicator, could lead to overreliance on Grid-Azimuth-Indicator. 3 - Hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3/4 - Difficult to identify points on a map on the ground due to lack of terrain reference points. 5 - Not observable.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS
B. OCCUPATION OF ASSEMBLY AREA (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Quartering Party Personnel (continued)						
- Identify order of march for company/platoon	YES	YES	YES	YES	YES	
- Identify time of platoon arrival at SP and RP	YES	YES	YES	YES	YES	
- Assume designated MOPP level	YES	YES	YES	YES	YES	
Linkup with company/team quartering party	YES	NO	NO	NO	YES	2/3/4 - Cannot exchange recognition signals, must use password which could lead to overreliance on radio communications.
Move to AA along route of march	YES	YES	YES	YES	YES	
Recon route of march from SP to RP:	YES	YES	NO	YES	YES	3 - Cannot dismount or walk on terrain, recon must be conducted from inside CVS and is therefore hindered by inability to view terrain open hatch, to utilize visual equipment, and by the vision blocks reduced HFOV.
- Monitor for NBC contamination	NO					1 - NBC conditions not simulated. Simulation does not allow for NBC monitoring.
- Mark obstacles and bypass routes along route of march	NO					1 - Cannot mark obstacles or routes for identification; reinforced obstacles are not represented.
Move to platoon sector at AA	YES	YES	NO	NO	YES	3/4 - Difficult to identify points on a map on the ground due to lack of terrain reference points. Expected transfer is nil. 3 - Sectors cannot be marked for identification.
Recon platoon sector at AA:	YES	YES	NO	YES	YES	3 - Cannot dismount or walk on terrain, recon must be conducted from inside CVS and is therefore hindered by inability to view terrain open hatch, to utilize visual equipment, and by the vision blocks reduced HFOV. 2/3 - Thermal Imagery System not represented. 3 - Ability to search 360° is limited by vision blocks reduced HFOV and lack of open hatch mode. 3 - TC's HFOV limited to 60°, TC can rotate cupola with modified CWS power control handle. 3 - Maximum distance at which targets may be detected is limited to 3,500 meters. 3 - Cannot observe sectors to the rear with gun tube oriented toward front of vehicle.
- Search for OPFOR elements in area	YES	NO	NO	YES	NO	5 - Not observable, can be inferred from targets detected.
- Identify obstacles and booby traps	YES	NO	NO	NO	NO	2/3/4 - SIMNET terrain data base and corresponding terrain maps contain few obstacles (buildings, rivers); reinforced obstacles/booby traps are not represented. 5 - Not observable.
- Monitor for NBC contamination	NO					1 - NBC conditions not simulated. Simulation does not allow for NBC monitoring.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS
B. OCCUPATION OF ASSEMBLY AREA (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Quartering Party Personnel (continued)						
- Identify covered/concealed vehicle positions	YES	YES	NO	NO	NO	3/4 - Done visually from inside CVS and is hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making difficult to identify adequate cover/concealment/terrain. 5 - Not observable.
Report results of recon to company/team quartering party NCOIC	YES	YES	YES	YES	YES	
Determine adequacy of AA	YES	YES	NO	NO	NO	3/4 - Manner in which reconnaissance must be conducted on device (inability to dismount and walk terrain or to utilize visual equipment) results in collection of information that is generally insufficient to determine adequacy of AA. 3/4 - Virtually all points on terrain are inadequate due to lack of cover/ concealment, inability to improve positions. 5 - Not observable.
Mark routes into, out of, and inside AA	NO					1 - Cannot mark routes for identification.
Mark covered/concealed vehicle positions	NO					1 - Cannot mark positions for identification.
Mark obstacles	NO					1 - Cannot mark obstacles for identification; reinforced obstacles are not represented.
Move to RP to meet platoon	YES	YES	YES	YES	YES	
Ground guide platoon into AA without halting or blocking route	NO					1 - Cannot utilize ground guides, since cannot walk on terrain.
Direct vehicles into positions	YES	NO	NO	NO	YES	2/3/4 - Cannot dismount to direct tanks into positions, may be done by observing from within the CVS as tanks occupy positions and giving directions over the radio; expected transfer is nil, could lead to overreliance on radio.
Brief PL on organization of AA	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS
C. CONSOLIDATION AND REORGANIZATION

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader						
Direct platoon to destroy or capture remaining OPFOR within platoon's position	YES	YES	YES	YES	YES	
Make an estimate of the situation	YES	YES	YES	YES	NO	5 - Not observable.
Designate to TCs:						
- Tank positions that provide cover/concealment, and fields of observation/fire on avenues of approach, OPFOR positions, obstacles, and key terrain	YES	YES	NO	NO	YES	3 - Exact coordinates at positions can be determined using Grid-Azimuth-Indicator. 3 - Must be done from inside CVS or by map and is therefore hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making difficult to identify adequate cover/concealment. Terrain allows for virtually unrestricted fields of observation/fire. 4 - Inadequate cover/concealment; could lead to overreliance on Grid-Azimuth-Indicator.
- Primary and supplementary sectors of fire	YES	YES	NO	NO	YES	3 - Must be done from inside CVS or by map and is therefore hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; lack of terrain reference points makes designating sectors difficult. 3 - Exact coordinates for sector boundaries can be determined using Grid-Azimuth-Indicator. 4 - Manner in which task is performed is too dissimilar to real world.
- Routes between primary and supplementary firing positions	YES	YES	NO	NO	YES	3 - Must be done from inside CVS or by map and is therefore hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making difficult to identify routes providing adequate cover/concealment. 4 - Inadequate cover/concealment; could lead to overreliance on Grid-Azimuth-Indicator.
- Routes for displacement	YES	YES	NO	NO	YES	3 - Must be done from inside CVS or by map and is therefore hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making difficult to identify routes providing adequate cover/concealment. 4 - Inadequate cover/concealment.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS
C. CONSOLIDATION AND REORGANIZATION

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader						
Direct platoon to destroy or capture remaining OPFOR within platoon's position	YES	YES	YES	YES	YES	
Make an estimate of the situation	YES	YES	YES	YES	NO	5 - Not observable.
Designate to TCs:						
- Tank positions that provide cover/concealment, and fields of observation/fire of avenues of approach, OPFOR positions, obstacles, and key terrain	YES	YES	NO	NO	YES	3 - Exact coordinates at positions can be determined using Grid-Azimuth-Indicator. 3 - Must be done from inside CVS or by map and is therefore hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making difficult to identify adequate cover/concealment. Terrain allows for virtually unrestricted fields of observation/fire. 4 - Inadequate cover/concealment; could lead to overreliance on Grid-Azimuth-Indicator.
- Primary and supplementary sectors of fire	YES	YES	NO	NO	YES	3 - Must be done from inside CVS or by map and is therefore hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; lack of terrain reference points makes designating sectors difficult. 3 - Exact coordinates for sector boundaries can be determined using Grid-Azimuth-Indicator. 4 - Manner in which task is performed is too dissimilar to real world.
- Routes between primary and supplementary firing positions	YES	YES	NO	NO	YES	3 - Must be done from inside CVS or by map and is therefore hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making difficult to identify routes providing adequate cover/concealment. 4 - Inadequate cover/concealment; could lead to overreliance on Grid-Azimuth-Indicator.
- Routes for displacement	YES	YES	NO	NO	YES	3 - Must be done from inside CVS or by map and is therefore hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making difficult to identify routes providing adequate cover/concealment. 4 - Inadequate cover/concealment.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS
C. CONSOLIDATION AND REORGANIZATION (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader (continued)						
Coordinate with TL and adjacent platoons for supporting direct fires and indirect fires	YES	YES	NO	NO	YES	3 - Exact coordinates of locations on terrain may be determined using the Grid-Azimuth-Indicator. 4 - TCs may learn to rely on Grid-Azimuth indicator, not present on real vehicle.
Cross-level personnel and reassign responsibilities	YES	YES	YES	YES	YES	
Request and assign replacements	YES	YES	YES	YES	YES	
Report REDCON status to TL when platoon is prepared to continue mission	YES	YES	YES	YES	YES	
Platoon Sergeant						
Consolidate status reports and forward platoon situation report to company 1SG	YES	YES	YES	YES	YES	
Direct evacuation of serious wounded/KIA	NO					1 - Troops/casualties are not represented in simulation.
Direct cross-leveling of ammunition	YES	NO	NO	NO	YES	2/3 - Method of ammunition transfer/resupply is unique to device. 4 - Ammunition transfer is too dissimilar from real world, expected transfer is nil.
Direct reassignment of personnel/replacements	YES	YES	YES	YES	YES	
Direct cross-leveling of supplies	YES	NO	NO	NO	YES	2/3 - Method of ammunition transfer/resupply is unique to device. 4 - Refueling is too dissimilar from real world, expected transfer is nil.
Direct evacuation of PW	NO					1 - Troops are not represented in simulation.
Tank Commanders						
Identify tank positions that provide cover/concealment, and fields of observation fire, avenues of approach, OPFOR positions, obstacles, and key terrain	YES	YES	NO	NO	NO	3 - Must be done from inside CVS or by map and is therefore hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making difficult to identify adequate cover/concealment. terrain allows for virtually unrestricted fields of observation/fire. 4 - Inadequate cover/concealment; could lead to overreliance on Grid-Azimuth-Indicator. 3 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator. 5 - Not observable.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS C. CONSOLIDATION AND REORGANIZATION (continued) Tank Commanders (continued)	If NO, Provide Comment (1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Identify primary and supplementary sectors of fire	YES	YES	NO	NO	NO	3 - Must be done from inside CVS or by map and is therefore hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; terrain allows for virtually unrestricted fields of observation/fire. 3 - Given exact coordinates, boundaries of sectors may be easily identified using Grid-Azimuth-Indicator. 4 - Could lead to overreliance on Grid-Azimuth-Indicator. 5 - Not observable.
Identify routes between primary and supplementary firing positions	YES	YES	NO	NO	NO	3/4 - Must be done from inside CVS or by map and is therefore hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; terrain difficult to identify continuous terrain that provides adequate cover/concealment. Terrain allows for virtually unrestricted fields of observation/fire. 5 - Not observable.
Identify routes for displacement	YES	YES	NO	NO	NO	3/4 - Must be done from inside CVS or by map and is therefore hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - SIMNET terrain data base and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; making difficult to identify continuous terrain that provides adequate cover/concealment. Terrain allows for virtually unrestricted fields of observation/fire. 5 - Not observable.
Submit situation report to PSG by radio/messenger	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS C. CONSOLIDATION AND REORGANIZATION (continued) Crews	If NO, Provide Comment (1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Eliminate OPFOR resistance on objective	YES*	NO	NO	NO	YES	* For a more detailed assessment refer to the Evaluation of Gunnery Activities. 2/3 - Crews cannot dismount to destroy or capture OPFOR positions with small arms fire. 2/3 - No degraded mode gunnery. 3 - Dismounted troops not represented in simulation. Array of targets represented is limited. 2/3 - Thermal Imaging System is not represented. 2/3/4 - Machine guns not represented, could lead to overreliance on main gun engagements.
Move to assigned firing positions	YES	YES	YES	YES	YES	2/3 - Lack of marked/improved positions, as distinguishing terrain features makes moving to exact location of position hard. 2/3 - Gunner's Auxiliary Sight is not represented, making it difficult to determine if vehicle is hull down.
Establish defensive tank positions	YES	NO	NO	NO	YES	3 - Crew cannot dismount to locate, adjust, verify cover/concealment/ tank position. 3 - Due to terrain smoothing, hull/turret-down positions are scarce and difficult to identify and occupy. 4 - Expected transfer is nil, inadequate cover and terrain.
Adjust/Improve tank positions as directed	YES	NO	NO	NO	YES	2/3/4 - Terrain cannot be altered or improved. 2/3/4 - Crew cannot dismount to direct positioning of the vehicle.
(NBC Tank) Monitor NBC conditions	NO					1 - NBC conditions not simulated. Simulation does not allow for NBC monitoring.
Establish/Maintain security including OP	YES	NO	NO	NO	YES	2/3/4 - Cannot establish/operate OP/LP. cannot dismount or walk on terrain.
Restore/install obstacles	NO					1 - Simulation does not allow for fortification of terrain.
Treat/evacuate wounded/KIA	NO					1 - Troops/casualties are not represented in simulation.
Process PWs/captured materials	NO					1 - Troops are not represented in simulation.
Cross-level ammunition as directed	YES	NO	NO	NO	YES	2/3 - Method of ammunition transfer/resupply is unique to device. 4 - Ammunition transfer is too dissimilar from real world, expected transfer is nil.
Reload/Restore ready racks and machine gun bins	YES	NO	NO	NO	YES	2/3 - Machine gun and bins ar not represented. 2/3 - Method of ammunition transfer/resupply is unique to device. 4 - Ammunition transfer is too dissimilar from real world, expected transfer is nil.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS
C. CONSOLIDATION AND REORGANIZATION
(continued)

Crews (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
						2/3 - Limited number of faults that can be diagnosed through SIMNET troubleshooting index. 2/3 - For some operational faults (i.e., thrown/broken tracks, vision blocks, and radio/intercoms) the crew must wait a specified period of time (the average repair time) before continuing.
Perform essential repair/maintenance	YES	NO	NO	NO	YES	4 - Maintenance is too dissimilar from real world, expected transfer is nil.
Cross-level supplies as needed	YES	YES	YES	YES	YES	
Prepare for OPFOR counterattack	YES	YES	YES	YES	YES	
Prepare to continue mission	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS
D. PASSAGE OF LINES

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader						
Receive/Analyze company/team OPORD	YES	YES	YES	YES	NO	5 - Cannot observe analysis of the OPORD.
Issue platoon warning order, including graphics	YES	YES	YES	YES	YES	
- Identify route to contact point	YES	YES	NO	NO	NO	3/4 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator; could lead to reliance on Grid-Azimuth-Indicator. 5 - Not observable.
- Identify passage point	YES	YES	NO	NO	NO	3/4 - Difficult to identify points on a map on the ground by map-terrain association due to lack of terrain reference points. Expected transfer is nil. 3/4 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator; could lead to reliance on Grid-Azimuth-Indicator. 5 - Not observable.
Issue platoon OPORD	YES	YES	YES	YES	YES	
Supervise platoon preparation	YES	NO	NO	NO	YES	2/3 - Cannot dismount to establish/operate OP 2/3 - Method of refueling vehicles is unique to device. 2/3 - Method of ammunition transfer/resupply is unique to device. 2/3 - Sensory cues used to diagnose faults are limited. 2/3 - Cannot perform PMCS. 2/3 - Limited number of faults that can be diagnosed through SIMNET troubleshooting index. 2/3 - For some operational faults (i.e., thrown/broken tracks, vision blocks, and radio/intercoms) the crew must wait a specified period of time (the average repair time) before continuing. 4 - Refueling, ammunition transfer, and maintenance procedures are too dissimilar from real world.
Report to command when platoon is prepared to move	YES	YES	YES	YES	YES	
(Option) Serve as liaison officer	YES	YES	YES	YES	YES	
(Option) As liaison officer, move to contact point and give recognition signals	YES	NO	NO	NO	YES	2/3/4 - Cannot exchange recognition signals, must use password which could lead to overreliance on radio communications.
(Option) As liaison officer, coordinate information with stationary force liaison officer	YES	YES	YES	YES	YES	
(Option) As liaison officer, return to platoon and brief TCs	YES	YES	YES	YES	YES	
Initiate movement by traveling in column formation	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to reliance on radio communication.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS
D. PASSAGE OF LINES
(continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader (continued)						
Report arrival at contact point, passage of passage point, RP and other graphic control measures to TL	YES	YES	NO	NO	YES	3 - Orienting a map by map-terrain association is difficult since the SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain features or vegetation that can be used as reference points. 3 - Orienting a map using a compass, requires the use of the Grid-Azimuth-Indicator, which is unique to the device. 4 - TCs may learn to rely on Grid-Azimuth-Indicator, not present on real vehicle. Inadequate terrain reference points.
Signal liaison officer to confirm number of passing vehicles	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to reliance on radio communication.
After clearing RP:						
- (Rearward passage) Report arrival at AA to TL	YES	YES	YES	YES	YES	
- (Forward passage) Order manuever/attack formation	YES	NO	NO	NO	YES	2/3 - Device does not allow for hand and arm signals to be issued. 4 - Inability to use hand and arm signals could lead to reliance on radio communication.
Control platoon fires	YES	NO	NO	NO	NO	2/3/4 - Machine guns not represented; could become dependent on main gun engagements. 2/3 - Array of targets/target signatures represented is limited. 3 - Difficult to identify vehicles by type. 5 - Not observable, infer from fire commands.
Platoon Sergeant						
Consolidate status reports and forward platoon situation report to company 1SG	YES	YES	YES	YES	YES	
Supervise platoon preparation	YES	NO	NO	NO	YES	2/3 - Cannot dismount to establish/operate OP 2/3 - Method of refueling vehicles is unique to device. 2/3 - Method of ammunition transfer/resupply is unique to device. 2/3 - Sensory cues used to diagnose faults are limited. 2/3 - Cannot perform PMCS. 2/3 - Limited number of faults that can be diagnosed through SIMNET troubleshooting index. 2/3 - For some operational faults (i.e., thrown/broken tracks, vision blocks, and radio/intercoms) the crew must wait a specified period of time (the average repair time) before continuing. 4 - Refueling, ammunition transfer, and maintenance procedures are too dissimilar from real world.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS
D. PASSAGE OF LINES
(continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Sergeant (continued)						
(Option) Designate personnel to serve as security element and accompany PL to coordination meeting	YES	YES	YES	YES	YES	
Tank Commanders						
Submit situation report to PSG by radio/messenger	YES	YES	YES	YES	YES	
Report to PL when prepared to move	YES	YES	YES	YES	YES	
Receive briefing from PL/liaison officer on passage	YES	YES	YES	YES	YES	
Communicate using visual signals/Maintain listening silence during passage	NO					1 - Device does not allow for hand and arm signals to be issued.
Monitor/Control tank movement/position in formation	YES	YES	NO	YES	YES	3 - Judging speed of vehicle/other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Lack of open hatch makes observing movement of tanks in formation difficult. 3 - TC's HFOV limited to 60°, TC can rotate cupola 300° with modified CWS power control handle. 3 - Estimating distance between objects is difficult. 3 - Lack of terrain features allows vehicles to almost constantly view each other while moving.
Crews						
Prepare for operation	YES	NO	NO	NO	YES	2/3 - Cannot dismount to establish/operate OP. 2/3 - Method of refueling vehicles is unique to device. 2/3 - Method of ammunition transfer/resupply is unique to device. 2/3 - Sensory cues used to diagnose faults are limited. 2/3 - Cannot perform PMCS. 2/3 - Limited number of faults that can be diagnosed through SIMNET troubleshooting index. 2/3 - For some operational faults (i.e., thrown/broken tracks, vision blocks, and radio/intercoms) the crew must wait a specified period of time (the average repair time) before continuing. 4 - Refueling, ammunition transfer, and maintenance procedures are too dissimilar from real world.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS
D. PASSAGE OF LINES
(continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Crews (continued)						
(Option) Selected personnel accompany PL and provide security at contact point	NO					1 - Personnel cannot dismount to establish security on surrounding terrain
(Option) Security element returns to platoon with PL	YES	YES	YES	YES	YES	
Move from AA/BP/Attack position to contact point	YES	YES	YES	YES	YES	
Perform traveling technique/column formation of movement	YES*					* - See performance element: ratings listed under Movement Formations and under Traveling.
Maintain prescribed march interval	YES	YES	NO	YES	YES	3 - Judging speed of other vehicles is difficult. 3 - Distinguishing between vehicles can be difficult, vehicles have no distinguishing features. 3 - Estimating distance between objects is difficult.
Move through contact point and passage lanes following directions from ground guides	NO					1 - Cannot make use of ground guides. Cannot dismount/walk on terrain.
Orient gun tube toward OPFOR position	YES	YES	NO	YES	YES	3 - Turret/Gun-to-Hull Reference System Display, used to identify turret/gun tube orientation, is unique to device. 3 - TC/gunner/loader can become easily disoriented when gun tube is not pointed over front of vehicle.
(Option) If OPFOR targets positively identified, engage targets	YES*	NO	NO	NO	YES	2/3 - No degraded mode gunnery. 3 - Array of targets represented is limited. 2/3 - Thermal Imaging System is not represented. 2/3/4 - Machine guns not represented, could lead to overreliance on main gun engagements. * For a more detailed assessment refer to the Evaluation of Gunnery Activities.
(Option) If contact with OPFOR is made during passage, return fire and continue movement through passage lanes	YES*	NO	NO	NO	YES	2/3 - No degraded mode gunnery. 3 - Array of targets represented is limited. 2/3 - Thermal Imaging System is not represented. 2/3/4 - Machine guns not represented, could lead to overreliance on main gun engagements.
After clearing RP:						
- (Rearward passage) Move to/Occupy AA following directions of ground guides	NO					1 - Cannot make use of ground guides. Cannot dismount/walk on terrain.
- (Forward passage) Execute designated manuever/ attack formation	YES*					See performance element ratings l sted under Movement Formations.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS
E. RELIEF IN PLACE

Platoon Leader	(1) Perform/ Practice?	(2) All Components?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
	If NO, Provide Comment					
Receive/Analyze company/team OPORD/FRAGO	YES	YES	YES	YES	NO	5 - Not observable. 3/4 - Orienting a map using a compass, requires the use of the Grid-Azimuth-Indicator, unique to device. TCs may become reliant on Grid-Azimuth-Indicator. 3/4 - Orienting a map by map-terrain association is difficult since the SIMNET terrain data base and corresponding terrain maps contain few distinguishing terrain features or vegetation that can be used as reference points. 3 - Ground recon must be conducted from within CVS and is therefore hindered by lack of open hatch mode, inability to walk terrain, vision blocks restricted HFOV, and inability to utilize visual equipment.
Conduct map/ground recon from AA to relief position:	YES	YES	NO	NO	NO	5 - Not observable. 3/4 - Difficult to identify points on a map on the ground by map-terrain association due to lack of terrain reference points. expected transfer is nil. 3/4 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator; could lead to reliance on Grid-Azimuth-Indicator.
- Identify assigned relief location	YES	YES	NO	NO	NO	5 - Not observable. 3 - Hindered by the inability to view terrain open hatch, to dismount and walk terrain, to utilize visual equipment, and by the vision blocks restricted HFOV. 3 - Difficult to identify positions on map on ground due to lack of terrain reference points. 4 - Expected transfer is nil.
- Identify routes into and out of assigned relief positions	YES	YES	NO	NO	NO	5 - Not observable. 3 - Visual survey terrain must be done inside CVS and is hindered by lack of open hatch, lack of visual equipment, and the vision blocks reduced HFOV. 3 - SIMNET terrain database and corresponding terrain maps contain few terrain features, sparse vegetation, and smoothed terrain; difficult to identify continuous terrain providing adequate cover/concealment. 3/4 - Difficult to identify points on a map on the ground by map-terrain association due to lack of terrain reference points. expected transfer is nil. 3/4 - Given exact coordinates, may be easily identified using Grid-Azimuth-Indicator; could lead to reliance on Grid-Azimuth-Indicator.
- Identify/Designate tank positions at relief position	YES	YES	NO	NO	NO	5 - Not observable.
Acquire/Review relieved unit's fire plan	YES	YES	YES	YES	NO	5 - Not observable.
Issue platoon OPORD	YES	YES	YES	YES	YES	

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS
E. RELIEF IN PLACE (continued)

	If NO, Provide Comment					
	(1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Platoon Leader (continued)						
Meet with designated liaison personnel to coordinate/ exchange information	YES	YES	YES	YES	YES	
Platoon Sergeant						
Establish link up/liaison as required	YES	YES	YES	YES	YES	
Direct tank positioning/identification of sectors	YES	NO	NO	NO	YES	2/3/4 - Cannot dismount to direct tanks into positions, may be done by observing from within the CVS as tanks occupy positions and giving directions over the radio; expected transfer is nil, could lead to overreliance on radio.
Tank Commanders						
Identify assigned tank position/sector	YES	YES	NO	NO	NO	3/4 - Given exact coordinates, points on terrain are easily identified using Grid-Azimuth-Indicator; could lead to overreliance on Grid-Azimuth-Indicator. 3 - Given terrain reference points, identifying points on terrain is made difficult by lack of terrain features, lack of open hatch, lack of visual equipment, and vision blocks reduced HFOV. 5 - Not observable.
Acquire/Review relieved unit's range cards	YES	YES	YES	YES	NO	5 - Not observable.
Communicate using visual signals/Maintain listening silence	NO					1 - Device does not allow for hand and arm signals to be issued.

Evaluation of Tank Platoon Mission Performance Elements

Device Evaluated: SIMNET

MISSION III. SPECIAL OPERATIONS MISSIONS
E. RELIEF IN PLACE (continued)

Crews	If NO, Provide Comment (1) Perform/ Practice?	(2) All Com- ponents?	(3) S-R Equiv.?	(4) Positive Tran/Cor?	(5) Observe Perform?	Comments
Monitor relieved unit's radio frequency	YES	YES	YES	YES	YES	
Move from AA to:						
- occupy hide positions and move into primary positions after relieved unit begins withdrawal	YES	YES	NO	NO	YES	3 - Gunner's Auxiliary Sight is not represented, making difficult to determine if tank is hull/turret-down. 3 - Crew cannot dismount or walk terrain to locate; adjust, verify tank position. 3 - Due to terrain smoothing hull/turret-down positions are scarce and difficult to identify and verify. 3 - Positions cannot be improved making them difficult to identify. 4 - Inadequate cover and terrain.
OR						
- occupy alternate positions as the relieved unit withdraws from primary positions	YES	YES	NO	NO	YES	3 - Gunner's Auxiliary Sight is not represented, making difficult to determine if tank is hull/turret-down. 3 - Crew cannot dismount or walk terrain to locate; adjust, verify tank position. 3 - Due to terrain smoothing hull/turret-down positions are scarce and difficult to identify and verify. 3 - Positions cannot be improved making them difficult to identify. 4 - Inadequate cover and terrain.
OR						
- occupy primary positions prior to relieved unit's withdrawal	YES	YES	NO	NO	YES	3 - Gunner's Auxiliary Sight is not represented, making difficult to determine if tank is hull/turret-down. 3 - Crew cannot dismount or walk terrain to locate; adjust, verify tank position. 3 - Due to terrain smoothing hull/turret-down positions are scarce and difficult to identify and verify. 3 - Positions cannot be improved making them difficult to identify. 4 - Inadequate cover and terrain.
Provide ground guides for operation	NO					1 - Cannot dismount or walk on terrain.
Switch to assigned radio frequency after relief is complete	YES	YES	YES	YES	YES	